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INDEX

	Pages		Pages
January	1–118	July	787–916
February	119–250	August	917–1066
March	251–374	September	1067–1218
April	375–512	October	1219–1362
May	513–658	November	1363–1478
June	659–786	December	1479–1610

Year Book 1949–1950.....Supplement to May Journal

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Haven Emerson—
The Public Health Statesman

CHARLES BOLDUAN, M.D., F.A.P.H.A.
Northport, N. Y.

I WAS greatly pleased when your chairman invited me to this meeting to participate in your tribute to my good friend Haven Emerson, on the occasion of his 75th birthday anniversary. The subject of my remarks is Haven Emerson, Statesman of Public Health.

Although we were both graduated from the P. & S., Emerson in 1899 and I two years later, our first close association began in 1914 when Emerson was appointed Deputy Commissioner in New York City's Health Department. I had entered the department in 1904 and at the time of Emerson's appointment was director of health education.

It may interest you to hear what, in my opinion, were the factors and experiences which not only influenced my friend to forsake permanently an excellent private medical practice, but which also thereafter shaped his remarkably successful career in the field of public health.

At the time of Emerson's appointment as Deputy Commissioner, New York City's Health Department enjoyed world-wide fame, because under the leadership of Hermann M. Biggs it had been outstanding in applying advances in medical science to public health administration. Thus in 1892, because of the threat of cholera, it established the first bacteriological laboratory to render free diagnostic services to practising physicians. In that year also it was the first to inaugurate a program for the administrative control of tuberculosis, and to provide for the reporting of cases of tuberculosis and for free sputum examinations for tubercle bacilli. In 1895 it established the first laboratory, outside of Europe, to manufacture antitoxin for diphtheria and for tetanus. As early as 1896 it led the way toward the sanitary supervision of the milk supply when it allowed the sale of milk in the city only under a permit from the board of health. In 1907 the health department began the registration of typhoid bacillus carriers; in 1908 it was the first health department to establish a division of child hygiene, and in 1914 the first to organize a bureau of health education. In 1912 the department inaugurated the first effective administrative control of venereal diseases, including the reporting of cases, the establishment of special clinics, the provision of free Wassermann tests, and the free treatment of syphilis with salvarsan.

You will readily understand that in

such an environment, one with an alert and trained mind like Emerson's would quickly absorb the new ideas and so fit himself to play an important part in public health administration in this country.

In the fall of 1915, on the resignation of Commissioner Goldwater, Emerson became Commissioner of Health. During the first six months as head of the department, Emerson called on a number of cardiologists to advise the Health Department how best to deal with heart disease as a health problem. This led to the organization of the New York Committee for the Study and Prevention of Heart Disease, which, as you know, has grown into the American Heart Association. He also busied himself with efforts to bring about some uniformity among health officers in their procedures for the control of communicable diseases. These led to the organization of a committee of the A.P.H.A., which in 1917 under Emerson's chairmanship published the first edition of the report, *Control of Communicable Diseases.* This as you know, is to appear presently in a seventh, revised edition, and is widely accepted here and in many other countries, as authoritative in its field. Also during this period Emerson's efforts to combat alcoholism by health education began, an undertaking which later resulted in the publication of the book *Alcohol and Man,* a scientific presentation of all phases of the subject by outstanding authorities under his editorship.

The middle of May, 1916, brought the new Health Commissioner face to face with the most extensive and most virulent epidemic of poliomyelitis ever recorded. Over 9,000 cases were reported in New York City and the case fatality was more than 27 per cent. I cannot help thinking that the vast amount of intensive study devoted to this epidemic by physicians, sanitarians, bacteriologists, parasitologists, entomologists, meteorologists, and other scientists was an important factor in shaping Emerson's career, for as Commissioner of Health it was his responsibility to keep track of all these investigations, help to coördinate them, and interpret them to the public.

During 1917, because of the marked increase in the cost of foods, Emerson devoted attention to popular education on nutrition, stressing especially cheaper sources of protein such as horse meat, and the importance of a mixed diet. He also found time to conduct a series of demonstrations for physicians on the technique of periodic health examinations.

Because of the defeat of Mayor Mitchel's reform administration in the election of November, 1917, Emerson resigned as Commissioner at the end of the year, and soon thereafter entered the Army with the rank of Major. Surgeon General Gorgas assigned him to duty as Chief Epidemiologist to the A.E.F. with offices at Tours. As such, Emerson maintained the reporting system for communicable diseases throughout the A.E.F. in England, France, Italy, and later also in Russia. He also inaugurated the publication of a weekly report of the Surgeon General's Office, a report which subsequently became a permanent publication of that office. Later, still in the Army, Emerson contributed to the Medical History of World War I, by writing the chapters dealing with Sanitary Reports and Supervision, and with the Control of Communicable Diseases. He was demobilized in July, 1919, having meantime attained the rank of colonel.

In the fall of 1919, Emerson served as Professor of Preventive Medicine at Cornell University in Ithaca. The following year he made the first of a long series of health surveys of large American cities—Cleveland, San Francisco, St. Louis, Boston, Louisville, Buffalo, Scranton, Bethlehem, and Philadelphia. Also

in 1920, Emerson served as a delegate to the International Conference on the Classification of Causes of Death. In 1921 he was appointed Professor of Preventive Medicine at Columbia's College of Physicians and Surgeons to develop the DeLamar Institute of Public Health, a position he held until his retirement because of age in 1940.

During Christmas week in 1924 while I was stationed at Bremen, I had the pleasure of accompanying Emerson on a rapid survey of ten of the larger cities in Germany to determine whether or not the child feeding activities carried on by the American Quakers were effective and should be continued.

Emerson's participation in the 1920 International Conference on the Classification of Causes of Death, and subsequently as a member of the Committee of Expert Statisticians of the League of Nations were probably important factors in turning his attention to the chaotic conditions prevailing in the terminology of illness. Largely because of his efforts, a National Conference on Nomenclature of Disease was formed in 1928, Emerson being chosen as President. With a small paid staff, and the active participation of health, hospital, medical, surgical, statistical, actuarial, and other organizations and individuals, a preliminary compilation of a *Standard Classified Nomenclature of Disease* was printed in 1932, followed by the first Official Edition in 1933. In these days of Social Security, and insurance for hospital and medical care, accurate and comparable morbidity statistics are indispensable and they, in turn, demand a standard nomenclature.

Emerson was also the moving spirit in a statistical study of about 600,000 patients discharged from hospital care in New York City during 1932. The results of this study are available in two volumes published by the Welfare Council. I might add that the use and interpretation of hospital morbidity statistics have recently been undertaken as a routine procedure in this city, the health department serving as the central collecting and tabulating agency.

In addition to the various important activities just described, Emerson found time in 1933 to serve on a committee of the New York Academy of Medicine whose report, emphasizing the importance of diabetes as a public health problem, led to the organization of the New York Diabetes Association. Several years later Emerson planned and edited a volume *Administrative Medicine* published in 1939, and he is at the moment busy editing a second, revised and enlarged edition. Moreover, he has participated actively, as a member in the proceedings of the Public Health Relations Committee of the New York Academy of Medicine, and attended regularly the meetings of the Board of Health of the City of New York, to which he was appointed for a second eight year term in 1946. Emerson also conducted the School of Public Health at the University of Minnesota during Professor Gaylord Anderson's service in the Army. His more recent work, a hospital survey for New York City, resulted in the establishment of the Hospital Council of Greater New York, which has been of great value in giving sound direction to the further development of hospital services in this city. Mention should also be made of Emerson's chairmanship of the Committee on Local Health Units, and of the volume *Local Health Units for the Nation*, of which he was a co-author. This bids fair to mark an important forward step in our administrative health structure in the United States.

This brief and incomplete sketch of Emerson's activities since his demobilization in 1919 shows him to have made many substantial contributions in the field of public health. These contributions, moreover, have dealt with fundamentals and not with mere details. I

remind you of the very useful and authoritative handbook on communicable diseases, of the great value to statisticians of the *International Classifications of Causes of Death*, of the *Standard Nomenclature of Disease*, and of the establishment of the Hospital Council of Greater New York. It is clear that his talents in the field are manifold, and you may wonder what school of public health gave him this ability and proudly claims him as a distinguished alumnus.

I believe I know, and I have already given you a clue. He is a graduate of the hard School of Experience, a school in which only those make good who have trained and alert minds and who give themselves whole-heartedly and unselfishly to the problems set before them. And if, *in addition*, they have a Sedgwick, a Welch, a Vaughan, a Prudden, a Biggs, a Park, or a Chapin to inspire them, then indeed is their success assured. Such a one is our good friend Haven Emerson, on whom this School of Experience has conferred the title "Statesman of Public Health."

Response*

HAVEN EMERSON, M.D., F.A.P.H.A.

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IT was Aeschylus, poet and dramatist of 2,500 years ago, who told his contemporaries that, "It is always in season for old men to learn," and my distinguished classmate the late Prof. Thorndyke proved to his scientific satisfaction that even in our time elders can learn as well as youngsters.

So today I have begun to get acquainted with those several visionary or imaginary Haven Emersons of whom you have heard such friendly tales by the triad of speakers. All you have said by your presence, your words of greeting and remembrance will be cherished in humility and gratitude by my family and by me as describing someone I should gladly have been in reality, as I have seemed to you.

Thomas Addison wrote that "He who would pass his declining years of life with honor and comfort should, when young, consider that he may one day be old, and remember when he is old that he has once been young." So in my present youth I must realize that someday I may be old. At that time I must recall the wisdom of Alexis Carrel who declared that, "For those whose forces are declining, appropriate work, not rest, should be prescribed."

Your generous expressions really belong to those men and women from my school days to this very year, who have taught and formed my mind and manners. I could name you not less than thirty of such, to whom you are indebted for whatever you have found of good and useful in me.

I am but the temporary chalice which transmits the distillate of their wisdom, their charity of heart, the spirit of their high purposes in life.

What you celebrate here today is the perpetually renewed evidence of the enduring worth of transmitted traits, and hopes, genes and ways of life, and undying inheritance of whatever of use we, of 1949, have felt and passed on to other minds and hands that follow.

* Response to tributes paid by C. F. Bolduan, Earle B. Phelps, and A. J. Chesley at a luncheon session of the Epidemiology Section, A.P.H.A., "In Honor of Haven Emerson," at the Seventy-seventh Annual Meeting, in New York, N. Y., October 26, 1949.

How fortunate we are to be of the company of the servants of science, learning, in the biblical sense, to be chiefs in our several communities because we seek to serve them. We have chosen truth instead of repose as our goal.

It may be said of us that "We have stood against the world for the local town, the familiar street, the folks next door, and for the inner strength of democracy, which is its determination to settle its own business among neighbors at home."

We are those American Radicals of the 1940's who, as President Conant has said, stand for equal opportunity, not equality of rewards. We are the missing political link between the past and the future of this great democratic land.

Max Planck warns the scientist as well as the artisan that no man is born with a legal claim to happiness, success and prosperity in life. I like to recall the plea of Orlando's servant in As You Like It.

> "Let me be your servant.
> Tho I look old, yet am I strong and lusty
> For in my youth I never did apply
> Hot and rebellious liquors in my blood.
> Therefore my age is as a lusty winter,
> Frosty but kindly; let me go with you."

I must stop a moment in my garrulity to remember publicly those loyal and devoted women, companions, secretaries, associates, colleagues who have made so much of my work a pleasure, and practicable: Grace Emerson, Gertrude Sturges, Harriet Hughes, Mary Ross, Anna Phillips, Francisca Thomas, and Martha Luginbuhl. To these my debt is deeper than can be put into print. I thank them, each and all, for having made possible such of my activities as have been useful.

And now to close with something of an apology and a message for the future. To those with whom I have shared contrary convictions, let me ask you to read the lines carved deeply in the wall of Hunter College at East 68th St. "We are of different opinions at different hours, but we always may be said to be at heart on the side of truth." And, lastly, while we shall grow old with Autumn and not reluctantly, let us remember the faith of Lawter which we may all share and in some measure practise.

"Though youth is far behind me, yet will I plant acorns. I do not ask that any man shall have obligation for the oak that may give him shelter and comfort—except an impersonal urge to plant acorns in his turn in the same spirit. As for me, it is enough to know that the oak shall issue and live for men who are to come."

Changes in Mortality Statistics Through the Use of the New International Statistical Classification*

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SINCE 1901, the *International List of Causes of Death* has been used in the United States for classifying causes on certificates of death. Because many certificates include two or more causes of death, it became necessary to formulate rules to decide the single cause to which the death should be ascribed. Such rules were drawn up under the supervision of the Bureau of the Census, of which the National Office of Vital Statistics was then a part. Since 1913, these rules, published as the *Joint Cause Manual,* have been in general use throughout the country. Both the *International List* and the *Joint Cause Manual* have been revised every ten years and every revision has resulted in breaks in the comparability of mortality statistics.

The sixth revision of the *International List* (1948) resulted in a new list known as the *International Statistical Classification of Diseases, Injuries and Causes of Death,* which differs radically in arrangement, and to some extent in inclusions, from the old classifications. At the same time, the rules of the *Manual of Joint Causes* were discarded and rules new to this country were adopted.

Previous revisions of the *International List of Causes of Death* were not accompanied by the drastic change in rules which accompanied this new classification. With some effort it was possible, therefore, to obtain figures which were wholly, or almost wholly, comparable from one decade to another. Under the new system an investigator will not be able to do this to the same extent.

For this reason it is imperative that there be full and complete understanding of this fact: that mortality trends will be disturbed in some instances to a degree that will preclude direct comparison with the past. But means can be found to demonstrate the degree of the disturbance and to provide a tool whereby current mortality statistics based on the new classification can be made comparable to those compiled before its introduction, at least grossly and for a limited time. This tool is termed a "comparability ratio" and it will be discussed further.

The effects of the changes in the classification and rules for primary cause selection can be studied by coding each death certificate in accordance with four possible combinations:

1. New classification and new rules
2. Old classification and old rules
3. New classification and old rules
4. Old classification and new rules

It was not possible to undertake all four methods, and it was felt advisable

* Presented before the Statistics Section of the American Public Health Association at the Seventy-seventh Annual Meeting in New York, N. Y., October 25, 1949.

to have available mortality statistics for 1949 which were comparable to the past as well as mortality statistics for this year which would be comparable to the future. Consequently, the New York City Health Department decided to use the first two of these combinations: the new classification and the new rules, which will be used henceforth, and the old classification and the old rules, which have been used in New York City for the past nine years. This permits the study of the gross effects due to the combined changes in classification and rules, and provides a link between the past and the future.

The purpose of this paper, then, is to report the New York City experience for the first eight months of 1949 and to show how the classification of causes of death has been affected by the introduction of the new *International Statistical Classification of Diseases, Injuries and Causes of Death* and the new coding rules.

LIMITATIONS OF THE DATA

With the inauguration of any new system, difficulties arise, which require solution as work progresses. The introduction of the new classification and coding rules was no exception. New York City was faced with the problem of using the new system immediately on January 1, 1949, before rules had been made final and without experience from any source as a guide. Mimeographed instructions distributed by the National Office of Vital Statistics were the initial "vade mecum." Additional changes have been made since. Therefore, coding has not been entirely consistent from month to month.

Another distortion in New York City data may result from the fact that the special death certificate form used by the Medical Examiner was not revised to conform to the standard form of medical certification. Space limitations on the form and need for speed in getting forms approved by the Board of Health led to the decision to forego revision of this form for the time being. The department was influenced in this decision by the fact that deaths from natural causes which the Medical Examiner is called upon to investigate are usually the result of coronary sclerosis, cerebral thrombosis, or other conditions causing sudden death, and that consequently only one medical condition is reported in the majority of instances. It must be mentioned, however, that the Office of the Chief Medical Examiner in New York City certifies approximately 20 per cent of the total deaths which occur in this city. One-third of these deaths result from external causes, which means that one out of seven of the deaths from natural causes—an appreciable proportion—is certified by a Medical Examiner. The difference in the medical certification form is undoubtedly of some influence on the resulting mortality statistics, albeit the influence is minimized by the small proportion of multiple diagnoses.

PRELIMINARY STEPS

In order to make possible use of the revised *International Statistical Classification* and proposed coding rules on January 1, 1949, the New York City Board of Health, on June 8, 1948, approved a revised form of the confidential medical report comforming to the medical certification which has since been recommended for universal adoption by the World Health Organization. Decision was also made to distribute the new certificates for use in December, at which time the supply of old certificates would be exhausted. Immediate use of the new certificate would not affect mortality coding for 1948 deaths, but would give an opportunity for physicians, hospital staff members, funeral directors, and health department personnel to familiarize themselves with the new certificate forms. At the same time, an

explanation of the changes in the form, of the reasons therefor, and directions for properly completing the certificate were sent to all hospitals, to the New York Academy of Medicine, to the five County Medical Societies of New York City for publication in their bulletins, and to funeral directors. An article containing similar material was also published in the department's *Quarterly Bulletin* which is distributed to all physicians in the city. Every effort was made to have the system in operation before the first of the year.

METHOD

Every death certificate received by the New York City Department of Health referring to a death since January 1, 1949, has been coded for cause of death in two ways: first, in accordance with the fifth revision of the *International List of Causes of Death* and the preference procedure of the *Manual of Joint Causes of Death;* and, second, in accordance with the sixth revision of the *International List* and the brief coding rules promulgated by the National Office of Vital Statistics. Both code numbers have been punched on the tabulating card for the death, so that cross-tabulations of one with the other could be prepared.

Tabulations were prepared monthly with the Abridged *International List* (fifth revision) on one axis, and the *Short List* of 150 terms of the sixth revision on the other. This tabulation is cumbersome, however, and Table 1 has been constructed as a simplification. It follows fairly closely that used in the *Current Mortality Analysis* published by the National Office of Vital Statistics and hence has the additional advantage of familiarity.

CHANGES IN MORTALITY STATISTICS

Examination of this table reveals that the use of the new classification and rules makes a mortality pattern different in some respects from that which would have been produced with the same data under the old *List* and *Joint Cause* procedure. Some causes have more deaths assigned to them when the sixth revision and new coding rules are used than they had so assigned when the fifth revision was used. Other causes have fewer deaths assigned under the new procedure. In this discussion, a "decline" means fewer deaths were assigned to the particular cause under the sixth revision than under the fifth. An "increase" means more deaths were assigned under the sixth revision than under the fifth.

Those causes which exhibit a decline in the number of deaths ascribed to them are nephritis (70 per cent), diabetes (55 per cent), syphilis (32 per cent), bronchitis (15 per cent), ulcer of the stomach and duodenum (12 per cent), cirrhosis of the liver (11 per cent), puerperal conditions (7 per cent), cancer (4 per cent), pulmonary tuberculosis (3 per cent), other forms of tuberculosis (2 per cent), diseases of early infancy (2 per cent), and congenital malformations (2 per cent).

The new classification and rules resulted in the assignment of more deaths to rheumatic fever (44 per cent), diarrhea and enteritis (39 per cent), influenza (31 per cent), cerebral vascular lesions (27 per cent), arteriosclerosis (21 per cent), hyperplasia of the prostate (11 per cent), hernia and intestinal obstruction (11 per cent), and diseases of the heart (7 per cent).

With influenza and acute rheumatic fever, the number of deaths is small, and the changes, though of interest, are unlikely to have serious side effects on statistics relating to other conditions. With diarrhea and enteritis, analysis of the difference is difficult to make because of the change in definition of infantile diarrhea. It can be shown, however, that two-thirds of the added deaths derive from Rubric 123 in the fifth revi-

TABLE I
Deaths in New York City
January - August, 1949
By causes as coded according to 5th & 6th Revisions of International Classification

Cause of Death (Sixth Revision of International List)	Sixth Revision List Numbers	Sixth Revision Number of deaths Jan.-Aug.	Sixth Revision Number of deaths June-Aug.	Fifth Revision List Numbers	Fifth Revision Number of deaths Jan.-Aug.	Fifth Revision Number of deaths June-Aug.	Ratio: New Old Jan.-Aug.	Ratio: New Old June-Aug.
All causes		52517	19044		52517	19044	1.00	1.00
Infective and parasitic diseases (excluding influenza)	001-138	2286	959	1-32,34-44, 115b	2433	1019	0.94	0.94
Tuberculosis (all forms)	001-019	1781	694	13-22	1828	708	0.97	0.98
Tuberculosis of respiratory system	001-008	1696	653	13	1700	666	0.97	0.98
Tuberculosis, other forms	009-019	125	41	14-22	128	42	0.98	0.98
Syphilis and its sequelae	020-029	206	70	30	304	114	0.68	0.61
Infectious diseases commonly arising in intestinal tract	040-049	3	2	1,2,4,5,27	1	1	3.00	2.00
Scarlet fever and streptococcal sore throat	050-051	16	8	8,115b	15	7	1.07	1.14
Diphtheria	055	1	0	10	1	0	1.00	—
Whooping cough	056	11	5	9	11	5	1.00	1.00
Meningococcal infections	057	31	12	6	31	12	1.00	1.00
Acute poliomyelitis	080	126	125	36	126	125	1.00	1.00
Measles	085	7	5	35	7	5	1.00	1.00
All other infective and parasitic diseases	030-039 052-054 058-074 081-084 086-096 100-117 120-138	104	38	3,7,11,12 23,24,25 26,28,29 31,32,34 37-44 (ex.44b)	109	42	0.95	0.90
Malignant neoplasms, including those of lymphatic and hematopoietic tissues	140-205	10187	3780	45-55,44b,74	10565	3924	0.96	0.96
Benign and unspecified neoplasms	210-239	230	104	56,57	228	103	1.01	1.01
Diabetes mellitus	260	1094	416	61	2367	867	0.45	0.48
Rheumatic fever	400-402	88	37	58	61	19	1.44	1.95
Diseases of the cardiovascular-renal system	330-334 410-468 590-594	26860	9461	83,90-103 130-132	25210	8929	1.07	1.06
Vascular lesions affecting central nervous system	330-334	3125	1209	83	2464	897	1.27	1.35
Diseases of heart	410-443	21843	7614	90-95	20392	7210	1.07	1.06
General arteriosclerosis	450	780	293	97	666	251	1.21	1.17
Nephritis and nephrosis	590-594	424	144	130-132	1437	474	0.30	0.30
Pneumonia	490-493 763	1719	545	107-109	1727	515	1.00	1.06
Pneumonia of the newborn		103	37					
Influenza	480-483	17	2	33	13	3	1.31	0.67
Bronchitis	500-502	61	17	106	72	17	0.85	1.00
Ulcer of stomach and duodenum	540-541	427	146	117	487	166	0.88	0.88
Appendicitis	550-553	159	61	121	158	60	1.01	1.01
Hernia and intestinal obstruction	560-561 570	364	149	122	329	126	1.11	1.18
Gastritis, duodenitis, enteritis, and colitis	543-571 572,764	191	78	119-120	137	51	1.39	1.53
Cirrhosis of liver	581	941	356	124	1060	394	0.89	0.90
Hyperplasia of prostate	610	320	118	137	289	105	1.11	1.12
Complications of pregnancy, childbirth, and the puerperium	640-652 670-689	97	36	140-150	104	40	0.93	0.90
Congenital malformations	750-759	587	201	157	601	213	0.98	0.94
Certain diseases of early infancy, except pneumonia and diarrhea of newborn	760-776 (ex.763& 764)	1545	615	158-161	1574	633	0.98	0.98
Senility without mention of psychosis ill-defined and unknown causes	780-795	428	156	162,199,200	419	152	1.02	1.03
All other diseases	Residual	4853	1747	Residual	4683	1688	1.04	1.03
Motor Vehicle accidents	E810-E835	407	127	170	404	125	1.01	1.02
All other accidents	E800-E802 E840-E962	1881	679	169,171-195	1880	679	1.00	1.00
Suicide	E963,E970-E973	494	159	163,164	495	160	1.00	0.99
Homicide	E964,E965 E980-E985	200	85	165-168	201	86	1.00	0.99

sion, part of which is included in Rubric 572 of the sixth revision. Rubric 123 of the fifth revision included miscellaneous intestinal disorders not elsewhere classified, one of which was diverticulitis, which has been transferred, in the sixth revision, to Rubric 572, entitled "Chronic enteritis and ulcerative colitis." The remainder of the increase can largely be accounted for by the relatively low weight of these conditions in the *Joint Cause Manual*.

Changes can best be evaluated by computing the ratio of deaths classified by means of the sixth revision to the deaths similarly classified by means of the fifth revision. The resulting ratio (the comparability ratio) gives at once

an indication of the degree of change and also provides a means for converting from one system to the other. For instance, the comparability ratio for diabetes is 0.45, which means that under the new classification system, there are assigned to this cause only 45 per cent of the deaths assigned to diabetes under the old classification system. If mortality statistics were prepared by use of the sixth revision only, then the number of deaths which would have been assigned to diabetes under the fifth revision can be estimated by dividing the available diabetes figures by 0.45.

CHANGES IN SPECIFIC CAUSES

If an increase is shown in a particular cause the increase must have occurred as a result of the addition of deaths withdrawn from other conditions. Contrariwise, a decline means that deaths must have been withdrawn from this condition and added to others. This is an over-simplification, since both factors operate simultaneously. An increase actually indicates that the additions were more numerous than the withdrawals; a decrease means that the additions numbered less than the withdrawals.

There will be interest not only in the net changes which occur in the use of the new classification system, but also in the other conditions affected as a result of these additions and withdrawals. Several of the disease categories most affected — nephritis, diabetes, syphilis, cerebral hemorrhage, and arteriosclerosis — are analyzed in detail in the schedules which follow. Section A of each schedule shows the rubrics included for both the fifth and sixth revisions of the

SCHEDULE I

New York City

Changes in Mortality Statistics Relating to Nephritis
January — August, 1949

			5th Revision	*6th Revision*
A. Code numbers			130–132	590–594
Deaths so charged			1,437	424
Ratio, 6th Revision to 5th Revision				0.30
B. Assigned to nephritis (130–132) in 5th Revision				1,437
Assigned to nephritis in both revisions				363
Gross difference (withdrawals)				1,074
Assigned to nephritis in 6th Revision but not in 5th (additions)				61
Net difference (loss)				1,013
C. Assignments to nephritis in 5th Revision but not in 6th Revision				
Sixth Revision Assignments	Hypertensive disease			817
		With heart and kidney involved	508	
		With kidney involvement only	254	
		With heart involvement only	40	
		Essential malignant hypertension	11	
		Other hypertensive disease	4	
	Arteriosclerotic heart disease			166
	Cerebral vascular lesions			15
	Chronic rheumatic heart disease			14
	Bronchopneumonia			17
	Arterial diseases			5
	Other conditions			40
	Total			1,074
D. Assignments to nephritis in 6th Revision, but not in 5th Revision				
Fifth Revision Assignments	Diabetes			23
	Cancer			-7
	Cirrhosis of the liver			7
	Other conditions			24
	Total			61

International List, the number of deaths charged to each and the ratio of the deaths included in the rubrics of the sixth revision to those included in the rubrics of the fifth revision.

Section B of the schedule lists, first, the number of deaths assigned to the specified cause under the fifth revision; second, the number so assigned under both revisions (i.e., the number not affected by the change); third, the gross change (i.e., the number of deaths assigned to the condition under the fifth revision but reassigned to other conditions under the sixth); fourth, the number of deaths assigned to other conditions under the fifth revision but assigned to this cause under the sixth; and, finally, the net difference, whether gain or loss, between the two methods of classification.

Section C shows the new assignments of withdrawals (i.e., the diseases now classified otherwise than to the disease under consideration), while Section D shows the original assignment of additions (i.e., the diseases which under the fifth revision would have been otherwise classified).

Let us consider "nephritis" as a cause of death (Schedule I). Under the fifth revision of the *International List* (Nos. 130–132), 1,437 deaths would have been so assigned. Under the sixth revision (Nos. 590–594) only 424 deaths are assigned to nephritis. The comparability ratio is 0.30 (i.e., a 70 per cent reduction in deaths assigned to nephritis). From Section B of this schedule it is learned that 363 of the 1,437 deaths originally assigned to nephritis remain there, and 61 are added from other causes. There were withdrawn 1,074, which are assigned elsewhere. The resulting net loss is 1,013.

The 1,074 deaths removed from the

SCHEDULE II

New York City

Changes in Mortality Statistics Relating to Diabetes
January — August, 1949

		5th Revision	*6th Revision*
A. Code numbers		61	260
Deaths so charged		2,367	1,054
Ratio, 6th Revision to 5th Revision			0.45
B. Assigned to diabetes (61) in 5th Revision			2,367
Assigned to diabetes in both revisions			1,038
Gross difference (withdrawals)			1,329
Assigned to diabetes in 6th Revision but not in 5th (additions)			16
Net difference (loss)			1,313
C. Assignments to diabetes in 5th Revision but not in 6th Revision			
Sixth Revision Assignments	Arteriosclerotic heart disease		713
	Hypertensive disease		242
	With heart involvement	214	
	No mention of heart	28	
	Cerebral vascular lesions		185
	Bronchopneumonia		40
	Arterial diseases		26
	Nephritis		23
	Chronic rheumatic heart disease		20
	Lobar pneumonia		17
	Cirrhosis of the liver		12
	Other conditions		51
	Total		1,329

D. Assignments to diabetes in 6th Revision but not in 5th Revision		
Fifth Revision Assignments	Cancer	6
	Others	10
	Total	16

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"nephritis" group under the new system are shown in Section C to be ascribed now largely to the hypertensive disease category. Into this group fall 817 deaths, or 76 per cent of the total 1,074. The major portion, 762, of these 817, show kidney involvement. These results could not have been unexpected when decision was made to classify nephrosclerosis under hypertension rather than nephritis. It is one of the few differences accruing from the change in the classification itself, rather than from the change in the coding rules.

Arteriosclerotic heart disease accounts for 166 additional deaths withdrawn from nephritis; here, the nephritic condition must have been definitely subordinated by its reporting in Part II of the medical certification of death. Most of the other conditions appearing in preference to nephritis — cerebral vascular lesions, chronic rheumatic heart disease, arterial and venal diseases, neoplasms and the like — are conditions to be expected concurrently in the age group affected. These cases represent opinions of attending physicians that the other conditions were more important factors in causing these deaths than the coexisting nephritis.

In Section D it is found that 23 nephritis deaths were assigned to diabetes under the old system and 7 each to cancer and cirrhosis of the liver. The remaining 24 of the total 61 additions to the nephritis category came from a miscellany of other conditions, of which tuberculosis accounted for 5 and genitourinary affections 6.

Detailed discussion of Schedules II to V is unnecessary, since the considerations are similar to those mentioned in connection with nephritis. However, a few factors of particular interest can be pointed out. The preference for diabetes over cancer (Schedule II–D) in six cases is indicative of understanding by the physicians of the use of the new form of medical certification, since it shows deliberate choice of a controllable condition over one ordinarily fatal. It

SCHEDULE III

New York City

Changes in Mortality Statistics Relating to Syphilis
January — August, 1949

		5th Revision	*6th Revision*
A. Code numbers		30	020–029
Deaths so charged		304	206
Ratio, 6th Revision to 5th Revision			0.68
B. Assigned to syphilis (30) in 5th Revision			304
Assigned to syphilis in both revisions			203
Gross difference (withdrawals)			101
Assigned to syphilis in 6th Revision but not in 5th (additions)			3
Net difference (loss)			98
C. Assignments to syphilis in 5th Revision but not in 6th Revision			
Sixth Revision Assignments	Arteriosclerotic heart disease		25
	Tuberculosis		22
	Cerebral hemorrhage		7
	Cirrhosis of the liver		7
	Bronchopneumonia		6
	Lobar pneumonia		7
	Other conditions		27
	Total		101
D. Assignments to syphilis in 6th Revision but not in 5th Revision			
Fifth Revision Assignments	Pulmonary tuberculosis and cancer		3

may well be mentioned at this point that New York City's experience in this respect has been excellent; full coöperation, understanding, and proper completion of the medical certification have been the rule. The department's nosologists have probably had greater difficulty in overcoming the mental set for giving high priority to conditions such as cancer, than they have encountered in coding the small fraction of improperly completed reports.

In the case of syphilis, to which 32 per cent fewer deaths were assigned, the deaths affected show less concentration in particular causes but wider spread over a variety of conditions (Schedule III–C).

Turning to those conditions for which an increase in deaths has resulted from the recent changes in the classification system and coding rules, two have been selected for detailed presentation — cerebral vascular lesions (Schedule IV) and arteriosclerosis (Schedule V). With the cerebral vascular lesions, a rise of 27 per cent in the number of deaths so assigned has occurred. The net increase of 661 deaths is the result of the withdrawal of 193 deaths and the addition of 854 deaths. Arteriosclerosis accounts for 120 of the 854 additional deaths ascribed to cerebral vascular lesions (Schedule IV–D). This may be due to faulty completion of the medical certification, since arteriosclerosis was undoubtedly reported in Part II of the medical certification, whereas it appears likely that it should have been reported as the predisposing (or primary) cause in Part I (b).

Indication by the physician of cerebral vascular lesions as the underlying cause of death in preference to heart disease (395 deaths), diabetes (185 deaths), and cancer (37 deaths) implies

SCHEDULE IV

New York City

Changes in Mortality Statistics Relating to Cerebral Vascular Lesions
January — August, 1949

		5th Revision	*6th Revision*
A. Code numbers		83	330–334
Deaths so charged		2,464	3,125
Ratio, 6th Revision to 5th Revision			1.27
B. Assigned to cerebral vascular lesions (83) in 5th Revision			2,464
Assigned to cerebral vascular lesions in both revisions			2,271
Gross difference (withdrawals)			193
Assigned to cerebral vascular lesions in 6th Revision but not in 5th (additions)			854
Net difference (gain)			661
C. Assignments to cerebral vascular lesions in 5th Revision but not in 6th Revision			
Sixth Revision Assignments	Hypertensive disease		109
	Bronchopneumonia		29
	Arterial diseases		14
	Other conditions		41
	Total		193
D. Assignments to cerebral vascular lesions in 6th Revision but not in 5th Revision			
Fifth Revision Assignments	Heart disease		395
	Diabetes		185
	Arteriosclerosis		120
	Cancer		37
	Bronchopneumonia		30
	Nephritis		15
	Cirrhosis of the liver		14
	Lobar pneumonia		13
	Syphilis		7
	Other conditions		38
	Total		854

that the cerebral accident prematurely caused the deaths of persons who might otherwise have lived longer.

Cerebral vascular lesions were jointly reported with bronchopneumonia as cause of death in 59 cases (Schedule IV–C and D). In 30 of these, the physician indicated the cerebral accident as the important factor in causing death; in the remainder the physician indicated the bronchopneumonia as the important factor. Two inferences are possible; a penny-tossing sort of choice was made, or the physicians used a nice distinction, depending upon whether (1) the bronchopneumonia developed in a patient recovering satisfactorily from cerebral hemorrhage, or (2) the bronchopneumonia was brought under control after it developed and it was quite obvious that the patient died as a result of the hemorrhage, or (3) a patient, recovering from bronchopneumonia, suffered a severe hemorrhage which, in the physician's opinion, caused the death.

In considering mortality statistics relating to arteriosclerosis, the subordination of bronchopneumonia to arteriosclerosis can be viewed as a commentary on the discriminatory selective certification by the physicians, in view of the terminal nature of bronchopneumonia (Schedule V–D). The 120 deaths listed under cerebral vascular lesions in Section C of Schedule V are the same ones listed under arteriosclerosis in Schedule IV–D. Comments in respect to these deaths were made in the discussion of the previous schedule.

INFLUENCE OF CODING INCONSISTENCIES

Reference was made earlier to changes in coding practice as limitations of the data. In order to measure the effect of these inconsistencies, separate data

SCHEDULE V

New York City

Changes in Mortality Statistics Relating to Arteriosclerosis
January — August, 1949

		5th Revision	*6th Revision*
A. Code numbers		97	450
Deaths so charged		646	780
Ratio, 6th Revision to 5th Revision			1.21
B. Assigned to arteriosclerosis (97) in 5th Revision			646
Assigned to arteriosclerosis in both revisions			491
Gross difference (withdrawals)			155
Assigned to arteriosclerosis in 6th Revision but not in 5th (additions)			289
Net difference (gain)			134
C. Assignments to arteriosclerosis in 5th Revision but not in the 6th Revision			
Sixth Revision Assignments	Cerebral vascular lesions		120
	Hypertensive disease		16
	Other conditions		19
	Total		155
D. Assignments to arteriosclerosis in 6th Revision but not in 5th Revision			
Fifth Revision Assignments	Bronchopneumonia		87
	Heart disease		42
	Diabetes		25
	Arterial diseases		18
	Aneurysm (except of heart and aorta)		14
	Lobar pneumonia		14
	Cerebral vascular lesions		11
	Chronic rheumatic heart disease		10
	Cancer		8
	Other conditions		60
	Total		289

for the last three months, during which no coding changes were made, as well as data for the entire eight month period, are included in Table I. Only a few categories seem to have been affected by inconsistent coding. Some inconsistencies will not show up in the table, however, because they resulted in changes only within categories. For example, disease of the coronary arteries when reported with arteriosclerotic heart disease was first assigned to "heart disease specified as including coronary arteries" (420.1); after discussion of the differences in coding the 10 per cent mortality sample with NOVS nosologists in May, assignment was made to "arteriosclerotic heart disease" (420.0).

On the other hand, with diabetes mellitus, more serious distortions ensued. Initially, if diabetes was reported as the final condition of a sequence in Part I of the medical certification, indicating the physician's opinion that it was the precipitating cause of other diseases mentioned, such as arteriosclerotic changes, it was assumed that the diabetes should have been reported in Part II and consequently ignored in coding. Since medical opinion is divided upon the question whether arteriosclerotic and other degenerative changes are consequences of diabetes, it was finally decided, after conferences with the NOVS nosologists, in late May, that it would be most sensible to accept the opinion of the attending physician in the particular case. This decision was also in keeping with the new general coding principle that the death should be charged to the condition indicated as primary by the physician in attendance. After this change was introduced, the number of deaths assigned to diabetes correspondingly increased, reducing the differential between the old and new methods for this condition. The effect was not substantial, however, as can be seen in Table I, which shows the ratio for the entire eight months to be 0.45, and for the last three months to be 0.48.

Two other causes were affected similarly by inconsistencies in coding practice: rheumatic fever and cerebral vascular lesions. An example will best illustrate what happened with rheumatic fever. A death certificate is received for a person 40 years of age. Rheumatic heart disease due to rheumatic fever is given as cause of death in Part I of the medical certification. Prior to the receipt of the printed *Instruction Manual on Cause of Death Coding* in May, such a certificate was coded to rheumatic heart disease (416), on the assumption that the rheumatic process was no longer acute. Subsequently, in accordance with the printed rule, such a death has been coded to rheumatic fever (401). This accounts for the increase in the comparability ratio shown in Table I for rheumatic fever from 1.44 for the entire period to 1.95 for the latter three months.

With cerebral vascular lesions, there was misinterpretation of the original instruction regarding this cause, when reported in association with malignant or essential hypertension. Until late May, deaths reported as due to such combinations were coded to hypertension. Since receipt of clarifying instructions at that time, such deaths have been charged to cerebral vascular lesions. The increase in the comparability ratio for this condition to 1.35 in June through August from 1.27 for the entire period is thus explained.

It is obvious that the ratio for the eight month period is affected by the changed ratio for the latter three months. Consequently, it might be considered preferable to have presented separately the ratios for the first five months and the last three months. This was not done, because it was felt desirable to present ratios for the full period. However, for the conditions most affected — diabetes, rheumatic fever, and cerebral vascular lesions — the five

month ratios were calculated. That for diabetes was reduced to 0.43, indicating that the change in coding practice resulted in an increase of 5 points in the comparability ratio for this disease, instead of the three points shown by the two sets of ratios in Table I. For rheumatic fever, the ratio was reduced to 1.21 indicating that the difference in the comparability ratio caused by coding inconsistencies was 74 points, rather than 51. The ratio for cerebral vascular lesions dropped to 1.22, indicating that the changes in coding practices caused this comparability ratio to increase by 13 points instead of eight.

CONCLUSIONS

The ratios which have been described supply a means for making comparable crude mortality rates based on deaths classified in accordance with the fifth revisions of the *International List* with such rates based on deaths classified in accordance with the sixth revision. The comparability ratios presented here apply only to New York City; different ratios may hold for areas where reporting practices, or the proportion of certificates having multiple diagnoses differ from those which exist in New York City. Further, these ratios cannot be applied to data specific for age, sex, or color. Nor can there be any assurance that these ratios will hold true for future years.

Fortunately, crude mortality data for many conditions of public health significance are disturbed little, or not at all. Heart disease and cancer, the two leading causes of death, while exhibiting opposite tendencies, do not show extreme distortion. Acute infectious diseases, except for syphilis, need no correction for comparability with the past. Deaths from puerperal conditions cannot be considered seriously affected, and the same is true for congenital malformations and diseases of early infancy. Of the chronic conditions of later life, diabetes mellitus is most affected, while consideration of the cardio-vascular renal group as a whole will minimize the changes which occur in the several subsidiary conditions.

It seems, however, that complete continuity, especially in analysis specific for the usual socio-economic factors, will not be possible. Considered judgment indicates that the 1949–1951 period will have to be taken as a base period for the measurement of future changes in mortality statistics. This may involve the use of both systems of classification for at least a three year period and the preparation of complete analyses of mortality statistics annually based upon each classification method. Against all these difficulties, however, there can be placed the very real advantage which accrues: that mortality statistics will represent the opinion of the best informed person—the physician in attendance at the time of death.

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A Standardized Rate for Mortality Defined in Units of Lost Years of Life

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THE recent publication of Dickinson and Welker[1] entitled *What is the Leading Cause of Death? Two New Measures,* which defines and discusses in detail the concepts of "life years lost" and "working years lost" has stimulated renewed interest in the problem of measurement of mortality. In rather loose terminology "life years lost" can be described as the total number of years lost through the failure of individuals to live some allotted life span, while "working years lost" refer to those falling between the productive ages between 20 and 65. It has long been recognized that a count of deaths alone did not give a complete picture of mortality and measures have been sought which would make some allowance for the widely held intuitive idea that death at age 70, for example, does not represent as great a loss to society as death at age 35. In a book published in 1936, Dublin and Lotka[2] devoted some space to a consideration of years of life forfeited as a result of individual causes. More recently, articles by Dempsey,[3] Greville,[4] and Robinson[5] have appeared, which set forth numerical statements of the potential years of life lost as represented by persons dying from certain causes. This approach is closely related to such questions as the total person-years of life experienced by a group of tuberculosis or cancer patients subsequent to onset or diagnosis of the disease.

So far as the writer can determine there has never been an attempt to tie in this concept of years of life lost with the computation of standardized death rates. It has seemed worth exploring the possibility, to see whether a serviceable new mutation of the standardized death rate can be developed, applicable to mortality from all causes and from certain specific causes. The object of this note is to discuss briefly some of the points which would bear on the construction of such a standardized rate of mortality (in units of lost years of life) by introduction of an allowance for years of life lost, to exhibit a few alternative sets of weighting factors which could be applied to age-specific death rates for this purpose, and to report on some results obtained from trial computations using these weighting factors.

For brevity, the proposed new family of rates will be referred to hereafter as standardized rates of lost years of life to distinguish them from the conventional standardized death rate.

The question Dickinson and Welker set out to answer was the number of life years and working years lost which could be attributed to certain causes of death in known populations—the population of the United States as constituted in 1930, 1935, 1940, and 1945. Their results were intended to take account of, and to be influenced by, the age

distribution of the populations observed and would seem to be analogous to crude death rates, based on the number of deaths alone. To bind their figures even more closely to a specific time and place, they used in their calculations life expectancies derived from mortality rates prevailing at the time of observation.

GENERAL PRINCIPLES IN CONSTRUCTING STANDARDIZED RATES

If the concept of lost years of life is to achieve maximum usefulness, it should be incorporated in a method designed to facilitate comparisons between different areas and time periods, in the same manner as standardized death rates are used to supplement crude death rates. Three desirable qualities for standardized death rates would seem to apply also to standardized rates of lost years of life:

1. The use of constant weighting factors to eliminate sources of variation other than age-specific mortality rates
2. Ease of computation
3. A concept readily grasped by workers in public health and allied fields

One method of arriving at a set of constant weights is to duplicate the procedure now followed for computing standardized death rates (age adjusted rate, direct method) and deal not with the actual number of deaths distributed by age, sex, and cause, but with the number of deaths in a theoretical standard population obtained by multiplying the specific death rates by the standard population. The second step would be to weight the deaths in the theoretical standard population by a figure representing amount of life (in years) lost, for which purpose the value for expectation of life at age of death has been proposed. Since one arbitrary element —the standard population—has been introduced, the further selection of fixed standard values for expectation of life, instead of permitting the values to vary as observed, would not appear to present any great stumbling block. The justification for this procedure is the purpose of getting rates for comparison, an objective which must be firmly fixed in mind and not confused with the problem of getting a rate descriptive in all respects of the population observed.

MEASURING LOSS OF LIFE

For some purposes, the number of years of life lost up to some arbitrary age limit, say 65 or 75 years (possible retirement ages), may be more meaningful than the total number of years of life lost. Dickinson and Welker recognized this distinction in their definition of "working years lost," although the desirability of further fixing a lower limit at age 20 may be questioned. Such considerations can readily be introduced into the calculation of standardized rates. While age limits, marking cut-off points for years of life lost, could theoretically be fixed anywhere, the conventional age groupings for tabulating deaths and calculating death rates would make it impractical to set them at ages other than 65, 75, and 85 years.

Numerical examples shown in Table 4 demonstrate that the introduction of an upper age limit influences the ranking of important causes of death based on the criterion of years of life lost. The problem here is not on the mechanics of rate construction but in definition of terms and deciding what is to be measured. The choice of a rate based on one criterion would not necessarily preclude the use of another rate under different circumstances.

ALTERNATIVE APPROACHES TO MEASUREMENT OF LOSS OF LIFE

In allowing for years of life lost, it may be appropriate to ask whether life expectations taken from a life table must be used when an upper age limit is introduced in computing loss. When a total amount of years of life lost is

desired without reference to an upper age limit, there is, of course, no alternative to the use of life table expectations.

Life expectations represent a projection from a definite schedule of age-specific mortality. A more direct value for years of life lost would be the difference between the highest age under consideration and the age at death. This difference can be construed to represent the maximum value for expectation of life attainable, if no mortality occurred in intervening ages. The maximum value is a stable figure and for the purposes of choosing a standard, might be preferred to a selection from any particular life table. The direct manner in which the maximum values can be obtained and the relative ease with which they can be explained to persons seeking information about the method and its assumptions, are also desirable attributes. The injection of life table computations for expectation of life unavoidably obscures a description of the method.

Inspection of the differences between life table values and the maximum attainable expectation (for fixed upper age limits) indicates that while there would be some changes in the absolute values for years of life lost, the relative ranking and position of causes of death would remain almost unaltered. This is illustrated in the following example which compares the years of working life lost between ages 20 and 65 in the United States (1945) as reported by Dickinson and Welker, using life table expectations, with alternate computations from the same basic data using the maximum attainable expectation. The percentage distributions were almost identical in the two sets of data. Further results in Tables 2 and 3 show that for standardizing rates to yield results for comparisons, the distinction between life table expectations and maximum possible expectations is of no great moment.

Working Years Lost (in thousands)

	Dickinson and Welker [1]		*Computation Based on Maximum Attainable Expectation*	
	Number	*Per cent*	*Number*	*Per cent*
All causes	13,913	100.0	15,720	100.0
Accidents	1,760	12.6	1,980	12.6
Heart	1,684	12.1	1,892	12.0
Pneumonia	1,123	8.1	1,274	8.1
Cancer	1,027	7.4	1,155	7.3
Tuberculosis	1,019	7.3	1,144	7.3
Nephritis	431	3.1	484	3.1
Cerebrovascular	414	3.0	465	3.0

ZERO MORTALITY ASSUMPTION

In estimating the years of life lost attributed to individual causes of death, the question of how to handle mortality at older ages from the same cause arises. There is some logical basis for disregarding mortality at older ages from the same cause in computing years of life lost, attributed to a specific cause, and such a procedure has been termed the zero mortality assumption.

However, the zero mortality assumption would require different sets of weights for individual causes, which would be incompatible with the general theory of standardized rates. With this assumption it would be quite possible in considering one cause of death to have an expectation of life at age x well in excess of the general expectation of life at age x. Also, the concept is meaningless when applied to deaths from all causes and a standardized rate of years of life lost for all causes is the

one which would be most often desired. Dickinson and Welker felt that it was unnecessary to take account of zero mortality assumptions in arriving at estimates of loss of life for observed populations and it seems that for the purpose of computing standardized rates this question may be safely dismissed.

Age	*Standard Population (1)*	*Maximum Expectation of Life (65 Yrs. Minus Class Midpoint) (2)*	*Total Potential Years of Life Lost (in thousands) Col. 1 × Col. 2 (3)*
All ages	1,000,000	—	30,059
Under 1 year	15,100	64.5	974
1–4	59,400	62	3,683
5–14	147,200	55	8,096
15–24	145,100	45	6,530
25–34	141,400	35	4,949
35–44	135,900	25	3,398
45–54	126,000	15	1,890
55–64	107,800	5	539
65–74	77,700	—	—
75–84	36,800	—	—
85 years and over	7,600	—	—

SUGGESTED WEIGHTING FACTORS

A standardized rate of lost years of life can be based on a system of double weighting of the age-specific death rates, one set of weights for the standard population and the other representing an amount of lost future life. The weights need not be applied in two separate operations, but can be combined for the purposes of computation, to reduce calculating machine labor by accumulating results in the dials and eliminating the need for posting individual cross-products.

In the following illustrations, all weighting factors were based on the same standard population derived from the *United States Life Tables for 1939–1941*[6] to facilitate comparisons. Needless to say, any other standard population could be selected.

The computations below show how weights used in connection with years of life lost up to age 65 were obtained, using the allowance for maximum expectation of life (both sexes combined for brevity):

When life expectations (e°_x) derived from a life table are taken in conjunction with a standard population (L_x) from the same life table, the combined weights may be interpreted in terms of another life table function (T_x) and found by reference to the tabulated values of T_x. It is well known that T_x is the total number of years lived after exact age x by the l_x persons reaching this exact age in the life table. In the problem at hand, the ages of persons would be distributed over each year of age instead of being concentrated at the start of a year of life. Therefore, the total number of years to be lived in the future by the L_x persons in the life table population between exact ages x and $x+1$ is the average value of the "T" function over the year of age x to $x+1$, which is approximately $\frac{1}{2}(T_x + T_{x+1})$ or $T_x - \frac{1}{2}L_x$.

A summation of $T_x - \frac{1}{2}L_x$ will thus give the desired weights for the various age periods after adjustment by a factor which scales down the total life table population to a figure of 1,000,000 used as the standard population for convenience in computation. Weights for total future years of life expected, or for

TABLE 1

Summary of Proposed Weights (Illustrative) Which Could be Applied to Age-Specific Death Rates for Purpose of Calculating Standardized Rate of Lost Years of Life

Age	Standard Population * (in thousands)	Weights: Total Years of Life (in thousands) Remaining to Persons in Standard Population Between Indicated Age and: Age at Death — Based on Life Table Expectation † (1)	Age 75 — Based on Life Table Expectation † (2)	Age 75 — Based on Maximum Value of Expectation ‡ (3)	Age 65 — Based on Life Table Expectation † (4)	Age 65 — Based on Maximum Expectation of Life ‡ (5)
Both sexes	1,000.0	35,963	32,370	39,227	26,962	30,059
Under 1 yr.	15.1	993	948	1,125	870	974
1–4	59.4	3,820	3,643	4,277	3,332	3,683
5–14	147.2	8,518	8,073	9,568	7,296	8,096
15–24	145.1	7,056	6,610	7,981	5,834	6,530
25–34	141.4	5,622	5,177	6,363	4,400	4,949
35–44	135.9	4,235	3,789	4,757	3,013	3,398
45–54	126.0	2,919	2,475	3,150	1,697	1,890
55–64	107.8	1,742	1,297	1,617	520	539
65–74	77.7	803	358	389	—	—
75–84	36.8	227	—	—	—	—
85 and over	7.6	28	—	—	—	—
Males	497.8	17,490	15,994	19,905	13,503	15,292
Under 1 yr.	7.7	494	475	574	439	497
1–4	30.4	1,899	1,825	2,189	1,682	1,885
5–14	75.2	4,220	4,034	4,888	3,676	4,136
15–24	74.0	3,473	3,287	4,070	2,929	3,330
25–34	71.9	2,743	2,557	3,236	2,199	2,517
35–44	68.8	2,039	1,853	2,408	1,495	1,720
45–54	63.0	1,376	1,191	1,575	832	945
55–64	52.4	795	609	786	251	262
65–74	35.8	349	163	179	—	—
75–84	15.7	92	—	—	—	—
85 and over	2.9	10	—	—	—	—
Females	502.2	18,473	16,376	19,322	13,459	14,767
Under 1 yr.	7.4	499	473	551	431	477
1–4	29.0	1,921	1,818	2,088	1,650	1,798
5–14	72.0	4,298	4,039	4,680	3,620	3,960
15–24	71.1	3,583	3,323	3,911	2,905	3,200
25–34	69.5	2,879	2,620	3,127	2,201	2,432
35–44	67.1	2,196	1,936	2,349	1,518	1,678
45–54	63.0	1,543	1,284	1,575	865	945
55–64	55.4	947	688	831	269	277
65–74	41.9	454	195	210	—	—
75–84	21.1	135	—	—	—	—
85 and over	4.7	18	—	—	—	—

* Derived from life table population (L_x) of *United States Life Tables, 1939–1941*. An allowance for a sex ratio at birth of 106 males per 100 females was made.

† As calculated from *United States Life Tables, 1939–1941*.

‡ Assuming no mortality in intervening years. Values used are upper age limit (age 75 or 65) minus class mid-point.

future years of life up to some specified age, such as 65 or 75 years, can readily be obtained as desired.

Table 1 gives five sets of proposed weights which could be applied to age-specific death rates for the purpose of calculating a standardized rate of lost years of life. The weights represent the total years of life which would be lost (under certain assumptions), if everyone in each age and sex group within the standard population died. When multiplied by the age-specific death rates, the results are expressed as the number of years of life lost due to mortality in the standard population. The results are precisely those which would be obtained by multiplying the deaths in the standard population by the expectation of life for each death.

one which would be most often desired. Dickinson and Welker felt that it was unnecessary to take account of zero mortality assumptions in arriving at estimates of loss of life for observed populations and it seems that for the purpose of computing standardized rates this question may be safely dismissed.

SUGGESTED WEIGHTING FACTORS

A standardized rate of lost years of life can be based on a system of double weighting of the age-specific death rates, one set of weights for the standard population and the other representing an amount of lost future life. The weights need not be applied in two separate operations, but can be combined for the purposes of computation, to reduce calculating machine labor by accumulating results in the dials and eliminating the need for posting individual cross-products.

In the following illustrations, all weighting factors were based on the same standard population derived from the *United States Life Tables for 1939–1941*[6] to facilitate comparisons. Needless to say, any other standard population could be selected.

The computations below show how weights used in connection with years of life lost up to age 65 were obtained, using the allowance for maximum expectation of life (both sexes combined for brevity):

Age	*Standard Population (1)*	*Maximum Expectation of Life (65 Yrs. Minus Class Midpoint) (2)*	*Total Potential Years of Life Lost (in thousands) Col. 1 × Col. 2 (3)*
All ages	1,000,000	—	30,059
Under 1 year	15,100	64.5	974
1–4	59,400	62	3,683
5–14	147,200	55	8,096
15–24	145,100	45	6,530
25–34	141,400	35	4,949
35–44	135,900	25	3,398
45–54	126,000	15	1,890
55–64	107,800	5	539
65–74	77,700	—	—
75–84	36,800	—	—
85 years and over	7,600	—	—

When life expectations (e^o_x) derived from a life table are taken in conjunction with a standard population (L_x) from the same life table, the combined weights may be interpreted in terms of another life table function (T_x) and found by reference to the tabulated values of T_x. It is well known that T_x is the total number of years lived after exact age x by the l_x persons reaching this exact age in the life table. In the problem at hand, the ages of persons would be distributed over each year of age instead of being concentrated at the start of a year of life. Therefore, the total number of years to be lived in the future by the L_x persons in the life table population between exact ages x and $x+1$ is the average value of the "T" function over the year of age x to $x+1$, which is approximately $\frac{1}{2}(T_x + T_{x+1})$ or $T_x - \frac{1}{2}L_x$.

A summation of $T_x - \frac{1}{2}L_x$ will thus give the desired weights for the various age periods after adjustment by a factor which scales down the total life table population to a figure of 1,000,000 used as the standard population for convenience in computation. Weights for total future years of life expected, or for

TABLE 1

Summary of Proposed Weights (Illustrative) Which Could be Applied to Age-Specific Death Rates for Purpose of Calculating Standardized Rate of Lost Years of Life

Age	Standard Population * (in thousands)	Weights: Total Years of Life (in thousands) Remaining to Persons in Standard Population Between Indicated Age and: Age at Death — Based on Life Table Expectation † (1)	Age 75 — Based on Life Table Expectation † (2)	Age 75 — Based on Maximum Value of Expectation ‡ (3)	Age 65 — Based on Life Table Expectation † (4)	Age 65 — Based on Maximum Expectation of Life ‡ (5)
Both sexes	1,000.0	35,963	32,370	39,227	26,962	30,059
Under 1 yr.	15.1	993	948	1,125	870	974
1–4	59.4	3,820	3,643	4,277	3,332	3,683
5–14	147.2	8,518	8,073	9,568	7,296	8,096
15–24	145.1	7,056	6,610	7,981	5,834	6,530
25–34	141.4	5,622	5,177	6,363	4,400	4,949
35–44	135.9	4,235	3,789	4,757	3,013	3,398
45–54	126.0	2,919	2,475	3,150	1,697	1,890
55–64	107.8	1,742	1,297	1,617	520	539
65–74	77.7	803	358	389	—	—
75–84	36.8	227	—	—	—	—
85 and over	7.6	28	—	—	—	—
Males	497.8	17,490	15,994	19,905	13,503	15,292
Under 1 yr.	7.7	494	475	574	439	497
1–4	30.4	1,899	1,825	2,189	1,682	1,885
5–14	75.2	4,220	4,034	4,888	3,676	4,136
15–24	74.0	3,473	3,287	4,070	2,929	3,330
25–34	71.9	2,743	2,557	3,236	2,199	2,517
35–44	68.8	2,039	1,853	2,408	1,495	1,720
45–54	63.0	1,376	1,191	1,575	832	945
55–64	52.4	795	609	786	251	262
65–74	35.8	349	163	179	—	—
75–84	15.7	92	—	—	—	—
85 and over	2.9	10	—	—	—	—
Females	502.2	18,473	16,376	19,322	13,459	14,767
Under 1 yr.	7.4	499	473	551	431	477
1–4	29.0	1,921	1,818	2,088	1,650	1,798
5–14	72.0	4,298	4,039	4,680	3,620	3,960
15–24	71.1	3,583	3,323	3,911	2,905	3,200
25–34	69.5	2,879	2,620	3,127	2,201	2,432
35–44	67.1	2,196	1,936	2,349	1,518	1,678
45–54	63.0	1,543	1,284	1,575	865	945
55–64	55.4	947	688	831	269	277
65–74	41.9	454	195	210	—	—
75–84	21.1	135	—	—	—	—
85 and over	4.7	18	—	—	—	—

* Derived from life table population (L_x) of *United States Life Tables, 1939–1941*. An allowance for a sex ratio at birth of 106 males per 100 females was made.

† As calculated from *United States Life Tables, 1939–1941*.

‡ Assuming no mortality in intervening years. Values used are upper age limit (age 75 or 65) minus class mid-point.

future years of life up to some specified age, such as 65 or 75 years, can readily be obtained as desired.

Table 1 gives five sets of proposed weights which could be applied to age-specific death rates for the purpose of calculating a standardized rate of lost years of life. The weights represent the total years of life which would be lost (under certain assumptions), if everyone in each age and sex group within the standard population died. When multiplied by the age-specific death rates, the results are expressed as the number of years of life lost due to mortality in the standard population. The results are precisely those which would be obtained by multiplying the deaths in the standard population by the expectation of life for each death.

A standardized death rate analogous to the measure of loss of life between 20 and 65 years as proposed by Dickinson and Welker has not been attempted here. Since most public health workers, if not economists, would attribute equal importance to life prior and subsequent to age 20, the weighting factors for loss of life up to 65 and 75 years given in Table 1 take full account of years lost prior to age 20.

PRESENTATION OF SOME STANDARDIZED RATES OF MORTALITY

The weighting factors in Table 1 (both sexes combined) were applied to age-specific death rates selected from the publication, *Vital Statistics Rates in the United States, 1900–1940*.[7] Table 2 presents standardized rates of loss of life in terms of years of life lost per 1,000 persons in the standard population for mortality from all causes for Connecticut 1900–1940 and, as of 1940, for four states in different sections of the country. Since the standard population was fixed at 1,000,000 people, the standardized rates are obtained by rounding off the total years of life lost to the nearest thousand. The conventional standardized death rate per 1,000 population is also shown.

All five standardized rates of lost years of life exhibit much greater variation than the standardized death rate. Between 1900 and 1940, the standardized death rate dropped 37 per cent in Connecticut while the declines in the standardized rates of lost years of life ranged from 60 to 73 per cent. Similarly, the difference between the standardized death rates for Arizona and Minnesota was 24 per cent while for the other measures it ran from 44 to 56 per cent.

Such results are not surprising and could have been predicted *a priori* by persons familiar with the pattern of age-specific death rates. The percentage improvement in mortality at younger ages has exceeded that at older ages during the past 40 years. Similarly, the difference, percentagewise, between states with good and poor mortality records has been greatest at the younger ages. The introduction of an allowance for years of life lost increases markedly the influence of mortality at younger ages on the composite rate.

The weighting factors were also tried

TABLE 2

Standardized Rates of Lost Years of Life for Deaths from All Causes

	Standardized Death Rate (per 1,000 Population)	*Standardized Rate of Lost Years of Life* (per 1,000 Population)*				
			Years Lost to Age 75		*Years Lost to Age 65*	
		Total Years Lost 1	*From Life Table Expectation* 2	*From Maximum Value of Expectation* 3	*From Life Table Expectation* 4	*From Maximum Value of Expectation* 5
Connecticut						
1900	23.7	577	472	568	378	421
1910	22.0	497	398	479	311	346
1920	20.2	426	333	402	255	284
1930	16.9	300	219	266	156	174
1940	14.9	230	157	190	104	115
Per cent change from 1900 to 1940	—37%	—60%	—67%	—67%	—72%	—73%
Arizona, 1940	17.7	370	289	350	220	245
Florida, 1940	17.3	321	241	293	174	194
Oregon, 1940	14.7	229	157	190	108	120
Minnesota, 1940	13.5	208	142	171	97	108
Per cent difference, Minnesota/Arizona	—24%	—44%	—51%	—51%	—56%	—56%

* Column numbers correspond to numbers assigned to weighting systems in Table 1.

TABLE 3

Standardized Rates of Lost Years of Life for Deaths from Tuberculosis, Diseases of the Heart, and Pneumonia and Influenza

	Standardized Death Rate (per 100,000 Population)	Standardized Rate of Lost Years of Life* (per 1,000 Population)				
			Years Lost to Age 75		Years Lost to Age 65	
		Total Years Lost 1	From Life Table Expectation 2	From Maximum Value of Expectation 3	From Life Table Expectation 4	From Maximum Value of Expectation 5
			Tuberculosis			
U. S. Death Reg. Area						
1920	122.8	38.0	33.4	40.9	26.8	29.9
1940	49.8	13.7	11.7	14.4	9.0	10.1
Per cent change	—59%	—64%	—65%	—65%	—66%	—66%
Arizona, 1940	200.4	55.5	47.8	58.8	36.8	41.1
Minnesota, 1940	30.5	7.5	6.3	7.7	4.7	5.2
Per cent difference	—85%	—86%	—87%	—87%	—87%	—87%
			Diseases of the Heart			
U. S. Death Reg. Area						
1920	331.2	39.8	23.0	27.9	12.6	13.9
1940	485.4	53.9	29.2	35.5	14.2	15.6
Per cent change	+47%	+35%	+27%	+27%	+13%	+12%
Arizona, 1940	407.7	46.6	26.0	31.6	12.7	13.9
Minnesota, 1940	404.0	41.8	20.9	25.2	9.5	10.4
Per cent difference	—1%	—10%	—20%	—20%	—25%	—25%
			Pneumonia and Influenza			
U. S. Death Reg. Area						
1920	261.4	70.8	59.8	72.1	48.7	54.3
1940	101.0	21.9	17.4	20.8	14.0	15.6
Per cent change	—61%	—69%	—71%	—71%	—71%	—71%
Arizona, 1940	162.1	44.6	37.6	44.8	31.8	35.5
Minnesota, 1940	92.6	15.3	10.8	12.9	8.3	9.2
Per cent difference	—43%	—66%	—71%	—71%	—74%	—74%

* Column numbers correspond to numbers assigned to weighting systems in Table 1.

out on three causes with different patterns of age-specific mortality rates—tuberculosis, diseases of the heart, and pneumonia (all forms) and influenza. The U. S. Death Registration Area rates for 1920 and 1940 and the 1940 rates for Arizona and Minnesota were the examples selected for Table 3.

For tuberculosis, the per cent changes in the standardized death rates were almost the same as those determined from the various standardized rates of lost years of life.

The apparent increases registered in recent years for mortality from diseases of the heart have been concentrated in the older ages. For the death registration states there was actually a drop in the death rates from this cause for ages up to 35 between 1920 and 1940. Since the standardized rates of lost years of life are influenced in lesser degree by mortality at older ages, the per cent rise for the U. S. Death Registration Area, as indicated by the conventional standardized death rate, was greater than for the computation taking into account years of life lost. This relationship corresponds to the cases where the standardized rates of lost years of life showed greater declines than the standardized death rate. For instance, if the mortality increases at the older ages had been on a small enough scale to permit the standardized death rate for diseases of the heart for 1940 to be below that for 1920, the declines between 1920 and 1940 as shown by the standardized rates of lost years of life would have been of still greater magnitude. The standardized rates of lost years of life accentuate the differences between areas

for mortality from disease of the heart.

The results for pneumonia and influenza followed those obtained for all causes and diseases of the heart.

With respect to the five alternate rates for lost years of life the percentage changes were greatest when age 65 was set as the upper limit for considering years of life lost, followed by age 75 as the upper limit, the total years of life lost ranking last. For ages 75 and 65 as upper limits, the use of life table expectations and the maximum possible values of life expectations led to almost identical comparisons.

The relative ranking of important causes of deaths is altered when standardized rates invoking the concept of lost years of life are employed. Table 4 summarizes the results obtained for the seven leading causes of death in the United States as of 1940. Diseases of the heart and cancer accounted for 30.4 and 11.3 per cent of the standardized death rate respectively, but contributed only 20.0 and 9.1 per cent of the standardized rate of total life years lost and even less to the years of life lost up to ages 75 and 65. For total life years lost, pneumonia (including influenza) and accidents ranked third and fourth respectively.

Considering years of life lost up to age 75, diseases of the heart retained first place, followed by accidents, pneumonia, and cancer. For years of life lost up to age 65, the margin between diseases of the heart and other causes diminishes further, and diseases of the heart, pneumonia, and accidents stand almost in a triple tie. The shifts in mortality since 1940, particularly the decline in the pneumonia death rate, would alter these standings, had they been computed as of 1948.

The percentage distribution of total life years lost in the population observed (United States, 1940) as reported by Dickinson and Welker has been given for comparison. The differences be-

TABLE 4

Standardized Rates of Lost Years of Life for Seven Leading Causes of Death. United States, 1940

	Standardized Rate of Lost Years of Life * (per 1,000 population)						
			Years Lost to Age 75		Years Lost to Age 65		
Cause of Death	*Total Years Lost* 1	*Total Years Lost as Taken from Dickinson and Welker* 1	*From Life Table Expectation* 2	*From Maximum Value of Expectation* 3	*From Life Table Expectation* 4	*From Maximum Value of Expectation* 5	*Standardized Death Rate per 1,000 Population*
All causes	268		192	232	136	151	15.94
Diseases of the heart	53.9		29.2	35.5	14.2	15.6	4.85
Cancer	24.4		15.5	19.0	8.1	8.9	1.80
Pneumonia, influenza	21.9		17.4	20.8	14.0	15.6	1.01
Accidents	21.4		17.4	21.1	13.7	15.2	0.94
Nephritis	15.2		8.3	10.1	4.3	4.8	1.36
Intracranial lesions	16.2		8.2	9.9	3.7	4.0	1.54
Tuberculosis	13.7		11.7	14.4	9.0	10.1	0.50
			Per cent Distribution				
All causes	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Diseases of the heart	20.0	16.3	15.2	15.3	10.5	10.3	30.4
Cancer	9.1	8.0	8.1	8.2	6.0	5.9	11.3
Pneumonia, influenza	8.2	8.8	9.0	8.9	10.3	10.3	6.3
Accidents	8.0	9.3	9.0	9.1	10.1	10.1	5.9
Nephritis	5.7	4.7	4.3	4.3	3.2	3.2	8.5
Intracranial lesions	6.0	4.7	4.3	4.3	2.7	2.7	9.7
Tuberculosis	5.1	6.1	6.1	6.2	6.7	6.7	3.1

* Column numbers correspond to numbers assigned to weighting systems in Table 1.

tween their percentages and those for the corresponding standardized amount (No. 1) are due to the older age distribution of the standard population, the Dickinson and Welker figures being lower for diseases of the heart, cancer, nephritis, and intracranial lesions. Since the age distribution of the United States may be expected ultimately to approach that of the standard population, the desirability of standardizing is evident, if one wishes to eliminate the age distribution of the population as a source of variation in these rates.

COMMENT

The conventional standardized death rate is influenced by the relative stability of the mortality rates at the older ages and does not permit sufficient weight to be given to the differences in mortality at younger ages, which are so important when viewed from the aspect of amount of life lost. The suggested weighting factors for standardized rates of years of life lost have been based on a concept which is readily understood and appear just as legitimate for use in computations as the standard population itself. As is true of the standardized death rates, only the age-specific death rates are needed for the computation of these rates. All the assumptions are taken care of in the weighting factors and the method lends itself to straightforward computations which can be done by relatively untrained clerks. While there is nothing inherent in any adjusted rate which is not present in the detailed age-specific death rates, the standardized death rate has fulfilled a need for reducing detail into a summary figure and such a purpose can also be served by a standardized rate of lost years of life. Instead of replacing the standardized death rate with one of these new measures, it may prove helpful to present both types of standardized rates as complements to each other.

The proposed standardized rates of lost years of life, particularly those with cut-off points at 65 and 75 years, recognize implicitly that deaths are postponable but not preventable. One objective of medicine and public health is to postpone death. A rate which measures this objective and can approach zero as deaths are prevented until a time subsequent to a target age has appeal as an adjunct to death rates used for general demographic purposes.

Of the five different methods of calculating a standardized rate of years of life lost considered, the writer's preference is No. 3, with a cut-off point at 75 years and counting the entire difference between age 75 and age at death. This rate gives great weight to the postponement of death factor and age 75 is preferred to age 65, since the goal of keeping people alive until 65 might be thought too modest. Actually, the results obtained from any of the five suggested schemes are roughly comparable and all accentuate differences in time and between areas in a more pronounced manner than the standardized death rate. The fine points as to the relative merits of any of the methods proposed or of the numerous others which could be invented are not of great significance compared to the benefits to be gained from uniform usage. In view of the inability to gain complete agreement on a standard population for calculating standardized death rates, no utopia of complete agreement on a method for standardizing for years of life lost can be expected. Ultimately, if there is any merit in the procedure, some common ground may be reached through the interchange of ideas and practices.

The unit of years of life lost and the unfamiliar numerical scale of values used should prove no great impediment. All scales are relative and with experience there is no reason why these results could not be interpreted as readily as those for standardized death rates.

Reference to a standardized rate of lost years of life may be an antidote for attitudes shaped unconsciously by reliance on rates dependent on a count of deaths alone. From the conventional death rates everyone now draws the conclusion that the most important public health problem of the day is the control of mortality from chronic diseases associated with old age. While this may be true, it should not be permitted to overshadow the fact that there is plenty of room for effecting savings of potential years of life at younger ages, particularly from deaths due to accidents.

SUMMARY

Methods for computing a standardized rate of mortality which takes into account age at death and potential years of life lost, have been discussed. Such rates may be obtained by developing weighting factors to be applied directly to age-specific death rates. Standardized rates (of lost years of life) have been computed for certain areas and time periods and found to reveal more striking differences than those obtained from comparisons of the conventional standardized death rates.

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MARCH OF DIMES

FIGHT INFANTILE PARALYSIS

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Environmental Health and the Aging Population*

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CHANGE in the age composition of a population is always the result of the simultaneous action of complex factors. For example, during the past half-century, when the sharpest recorded changes in life expectancy and average age at death occurred, the American people have enjoyed progressively higher standards of living and better nutrition. They have become better educated. Transportation has improved. The nation has become more urbanized. Advances in the medical sciences have made possible the prevention of some diseases, the cure of others, and better management of most. Not the least important factor has been the establishment of environmental barriers against the spread of disease.

On the debit side of the ledger there have been two world wars. Increased mechanization of the factory and home have increased accident hazards. New and deadly materials have been discovered and come into wide use. The tempo of life, both urban and rural, has increased.

We have had, then, a variety of forces —mostly beneficial—working upon the population. The net result has been that the average unit in the population has been made to live longer. However, as the average length of life has been extended, so too has the time over which the individual is exposed to the favorable and unfavorable conditions that influence his function and development.[1]

It so happens that the principal recognized hazards to health in the early part of life are primarily exogenous, while those that are significant in later life seem to be largely endogenous. This may explain in part why the engineer, by establishing environmental barriers against the spread of communicable disease, has contributed directly to increased longevity. It suggests, also, that the physical environment may not be a direct etiological factor in organic disease. However, as Frank points out, the problem of aging is not purely a biological one, but has large cultural, social and psychological implications.[2]

It is our purpose here to examine some of the health problems associated with an aging population and to speculate on the significance of the physical environment in relation thereto. As a by-product, it may be possible to hazard a prediction as to the role of the engineer in chronic disease prevention and control.

The subject is so complex and intangible that discussion of it must appear discursive, and no obvious point of departure suggests itself. As a baseline, it is important to recognize that the objectives in environmental health are (1) to establish physical barriers to prevent the spread of disease, and (2) to provide

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surroundings that will help maintain vital resistance and promote positive health and a sense of well-being. The engineer is concerned primarily with inanimate matter and directs his attention not to people but to the physical environment in and with which they must live. He is equipped to prevent but not to cure.

The keys to successful public health practice are to be found in the understanding of the etiological and epidemiological characteristics of diseases of community-wide importance. For instance, it was impossible to develop effective environmental health programs until there was reasonably precise knowledge about the causes and mode of spread of typhoid fever, the dysenteries, yellow fever, malaria, and cholera, to name a few communicable diseases that have been controlled by sanitation measures.

There is an analogy between our position at present relative to the prevention of chronic disease and the situation that existed before the germ theory of disease was enunciated. Then, blood-letting and bed rest were advocated but used only *after* the illness appeared. Now in our chronic disease programs early diagnosis is emphasized. Yet, in general, treatment for most of the organic diseases is largely palliative and destined to postpone rather than prevent death from the diagnosed cause of illness.

Until more light is shed on the cause or mechanism of those diseases most frequently attacking older adults, efficiency in preventive programs will be difficult. Environmental health measures, if they are to play any role in chronic disease control, must either await the accumulation of essential knowledge, or they may be directed at raising the standard of living with the knowledge that such activities usually benefit the public health.

In spite of this generally pessimistic note about the present role of environmental health workers in the attack on health problems associated with the aging population, it is possible to comment positively, or at least to discuss hopefully, certain aspects of the subject.

Environmental Cancer—For example, in the field of cancer prevention there are certain definite signs that environmental controls may be expected to be useful. Even though there remains a vast ignorance as to the carcinogenic properties of the environment, there is an increasing literature on environmental cancer, almost all of which is industrial in origin.[3] As the use of known cancer producing materials becomes more widespread and as more becomes known about the carcinogenic spectrum, it is likely that greater attention will be paid to non-industrial environments.

Of the few recognized carcinogens occurring in the natural environment, solar radiation and radium are among the best established.

It is the artificial environment of our industrial society that has created more serious carcinogenic potentialities. Soot and certain waste products from the fractionation and distillation of coal and petroleum, as well as the wastes from the smelting and processing of certain metals may produce cancer. Fully 90 per cent of the known environmental carcinogens never existed in dangerous concentrations until industrial processes brought workers into constant and close contact with them.[4]

It is indulging in pure speculation to attempt to prophesy the role that the engineer may play in cancer control. Industrial hygiene engineers already are concerning themselves with the protection of workers against excessive exposure to known carcinogens. It may be too early to train large numbers of engineers in cancer control, but there should be no delay in interesting at least a few in this field.

Heart Disease—Undoubtedly the po-

tential death toll from diseases of the heart and circulatory system has been reduced by communicable disease control and treatment of recognized heart ailments. Engineering control of health hazards associated with environmental defects has helped prevent the spread of infections known to be precursors of heart disease. For practical purposes, however, little has been done to develop a physical environment in which those with heart afflictions may be protected against unnecessary additional cardiac damage.

Glickman and his coworkers, reporting on the effects of sudden environmental temperature changes on cardiac patients, note few differences between the response of those with cardiac ailments and those in the control group.[5] They conclude that the differences may as well have been related to the aging process.

These observations may be used to illustrate an administrative problem. From the engineering standpoint it is interesting that there were differences; but until their practical significance is assessed, there is little reason to reconsider air conditioning, ventilation or heating standards. In other words, the mere revelation of hitherto unknown facts cannot without interpretation be used as a basis for changing standards or practices.

It is impossible to resist a temptation to draw an analogy between an important engineering research finding a quarter of a century ago and the role of the physical environment in heart disease. Talbot demonstrated that relatively mild stresses applied repeatedly caused failure in railroad rails resistant to much greater stresses applied a few times or continuously.[6] Is it fair to assume that the stresses inherent in frequent, literally thousands of stair ascents may ultimately produce cardiac failure in persons with mild or unrecognized heart disease?

Mental Health—The potential of the physical environment to produce mental health problems remains to be defined. Certain characteristics of dwellings and working places are known to cause tensions, but there is insufficient epidemiological evidence upon which to base activities aimed at controlling environmental hazards to mental health. It is likely that the physical environment *per se* seldom produces mental illness, although it may serve as a contributory factor by increasing the hazard of breakdown in persons on the threshold of mental illness.

Studies of the livability of low-rent dwellings have shown that inadequate storage space and unsatisfactory room layouts, among other factors, make housekeeping difficult and unpleasant.[7] If we accept the premise that longevity implies more prolonged exposure to the continuing hazards of living, such harassments as these may be especially significant for older people. Recommendations for the design of housing for elderly persons take these points into account.[8-11] However, research is needed to substantiate or refute the group judgments underlying such recommendations.

Housing—A thorough knowledge of population statistics is basic for the planning of housing.[11] Designers and builders of houses have not yet shown that they appreciate that changes in the age composition of the population are paralleled by changes in family composition and size. At both ends of the adult span of life, single-person families are more numerous than in the age group from 25 to 64. Except in large cities, little has been done to provide housing for one- and two-person families, particularly for those in the twilight years of life. Even in the best planned modern housing developments attention is rarely paid to design for elderly tenants.

There is wide agreement among stu-

dents of the subject that housing for elderly people needs special consideration as to location, design, and equipment.[8–11] In general, all new housing projects should contain provisions for persons of all age groups, and the able-bodied elderly should be housed with the rest of the community.

Older persons are ordinarily housed more safely in single-story units than in dwellings containing stairs. It is not so widely realized that special attention should be paid to provision for warmth, layout for efficient and easy housekeeping, and accident prevention. It is desirable also to provide communal facilities and easy access to such neighborhood facilities as stores, churches, theaters, and public transportation. Furthermore, the question of elastic design (i.e., provision for easy modification of dwelling size to take care of changing family needs) has hardly been explored.

If housing plays any role in determining the health status of a community, it is obviously related to the health of old persons and the infirm.

Accidents—Death rates from accidents traditionally have been highest in the age group 65 and over. In 1947 the accidental death rate for persons in this age group was 286.8 per 100,000, of which fatal falls accounted for 59 per cent and motor vehicle mishaps represented 17 per cent.[12] The accidental death rate for persons 45 to 64 years old was 68.5 per 100,000. The number of permanent disabilities produced by accidents is significantly larger than the number of deaths.

More than 3 out of 4 fatal home accidents among persons 65 years of age or older are caused by falls, and in 1947 accounted for more than 15,000 deaths. These accidents occurred in various parts of the house, although the bedroom was the most frequent site.

The causes of accidents are manifold. In older persons especially, physical deficiencies and poor judgment are frequently cited as contributory causes. However, structural or mechanical defects that predispose to accidents should not be overlooked by the health official concerned with accident prevention. In the design, construction, and maintenance of shelter for the aged and infirm, special attention should be given to the elimination of accident hazards.

Atmospheric Pollution—Although the epidemiological bases for a large-scale attack on air pollution are insecure, experience in London, England, and Donora, Pa., during the late fall of 1948 focuses attention on the potential hazard presented by smog (i.e., a combination of smoke and fog).

Acute mass disasters from atmospheric pollution are spectacular events because of the resulting number of deaths and disabled persons encountered. However, such catastrophes occur rather infrequently and result from unusually massive exposures. In point of fact, they are of lesser importance than more widespread and less obvious injuries to health occasioned by the prolonged action of lower concentrations of atmospheric impurities on larger population groups.[13] Nevertheless, Whipple many years ago pointed out that epidemics in the ultimate may serve as life savers. The London and Donora incidents may well become the incentives to basic work in this field.

In London, deaths from all causes during the week of the widely publicized intense fog of November, 1948, rose sharply in comparison with previous weeks and with the same week in previous years.[14] Death rates from bronchitis and pneumonia were more than double those for the same causes during each of several preceding weeks. Possibly the most significant public health aspect of this particular London fog is revealed by analysis of the age grouping of fatal cases of bronchitis and pneumonia. For both diseases, the greatest excesses in mortality rates occurred

among persons 45 years of age and older, the peak being in the age group 65 and over. Among persons under 45, there were no significant differences between either the crude or the respiratory disease death rates for preceding weeks and those for the foggy week.

At Donora, all of the fatalities which were attributable to the smog incident occurred among persons over 52, the mean average and median ages being 65.[15] The Public Health Service investigation of the situation revealed also that there was a significantly higher incidence of serious cases among persons in the older age groups. Similar crises had occurred previously in the community, probably being associated with adverse atmospheric conditions. An interesting sidelight of the inquiry was the revelation that there appeared to be a positive correlation between the severity of the affliction and certain aspects of housing quality.

Roth and Swenson, in an unpublished study of the irritant aspects of atmospheric pollution, point out that irritation appears to increase with age and that susceptibilities vary widely and are greatest for persons whose eyes or nasal passages are inflamed.[16] In their reference to the implications of age, they show that college students require a concentration of about four times the strength of the irritant (e.g., formaldehyde vapor) needed to produce equivalent irritation in persons over 50. Furthermore, susceptibility appears to increase with age even in older persons.

As a result of these isolated experiences, is it fair to assume that older people are especially susceptible to the hazards of atmospheric pollution? Is it likely that older persons, who may have less efficient or more worn out respiratory or circulatory systems than younger members of the community, when exposed to abnormal atmospheric conditions may be seriously embarrassed? What specific air pollutants are most significant in producing excess morbidity and mortality? Answers to questions such as these will be important in planning and operating community-wide projects for the control of air pollution, and will also play a role in increasing life expectancy.

Care of the Chronically Ill—The increase in recognized chronic disease has created a need to plan for and provide a variety of facilities for care of the chronically ill. Therein lies a fertile field for engineering study and progress in the design, construction, equipment, and maintenance of hospitals, infirmaries, nursing homes, and outpatient centers.

Hope recently has outlined some of the environmental sanitation problems in the national hospital survey and construction program.[17] As he points out, it is one of the few activities in which the engineer is identified with the care and treatment of the ill and infirm. With rare exceptions, there is little evidence that sanitary engineers involved in hospital design, construction, and maintenance have concerned themselves yet with much beyond their traditional interest in water supply, plumbing, and waste disposal. In the field of radiation therapy alone, there appears to be abundant need for public health engineering skill in the design and maintenance of treatment rooms and equipment. Furthermore, increased use of radioactive materials in medical research and patient care will pose a variety of new problems in radiation protection and hospital waste disposal.

Even casual observation of relatively modern plants for the care of the chronically ill reveals the need for substantial extension of knowledge concerning the thermal environment, illumination, noise, and materials of construction as they relate to elderly persons and the infirm. Standards are based insecurely on group judgment supported largely by limited physiological research on young, healthy adults. In

spite of the inherent difficulties of carrying out controlled laboratory studies on persons past middle age, serious consideration should be given to necessary physiological and psychological research on elderly persons. Without the basic data which can be obtained only through such research, it is unlikely that there will be significant improvements in the physical standards for shelter for the aged and infirm.

DISCUSSION

It is clear that planning an environmental health program for the aging population is not only complex but at present must be based largely on speculation. Intuitively we are led to believe that the physical environment will ultimately be demonstrated to be significant in the etiology of organic disease. Factual bases for such an assumption are inadequate.

The immediate problem, from the engineer's standpoint, seems to be one of gathering and analyzing data concerning the relationships between the environment and the health of older people. Little is known of the physiological and psychological responses of the aged and chronically diseased to sharp changes in the environment. The implications of micro-changes are virtually unknown.

In spite of the lack of factual bases for action, sound judgment dictates that the solution of health problems among the aging population will involve preventive as well as curative measures, and that the preventive program will include environmental controls as well as improvements in personal hygiene. Present knowledge supports the belief that the physical environment contributes to the causes of cancer and accidents; further, it points up a relationship between environment and the course of mental illness and of diseases of the heart and circulatory system. Is it unreasonable to expect that knowledge to be gained in the future will bear out these facts?

This discussion would be incomplete without mention of the public health significance of the continuing application of basic sanitation measures. Although many of the diseases normally resulting from an insanitary environment have been brought under control, eternal vigilance will be necessary to preserve the gains already made. It would be patently absurd not to maintain existing barriers against environmental hazards to health. Measures to prevent the spread of enteric and insect- and rodent-borne diseases are as important for the aged as for the young. For this reason alone, health agencies must promote widespread application of existing sanitation knowledge to prevent preventable diseases. Such action will raise the standard of living and bring measurable health benefits to all segments of the population.

It has already been mentioned that increased longevity also increases the period of time during which the human organism may be exposed to environmental hazards. Despite the success which has attended engineering efforts to improve and protect water, milk, and food supplies, and to control disease-carrying insects and rodents, there remain a large number of unsolved sanitation problems. Food-borne disease seems to be on the increase.[18] New problems are appearing in water supply.[19] The radiological health field is in its infancy, and the surface has only been scratched in the hygiene of housing.[20]

There is acute need to realign official and voluntary forces to strengthen sanitation activities throughout the nation. Serious personnel shortages exist, and many existing sanitation workers are inadequately trained. Most are poorly paid. There are literally thousands of conflicting ordinances, codes, and regulations in effect which serve to impede

uniform and coördinated action. Although progress is being made, sanitation activities continue too frequently to be carried on as isolated programs comparatively insulated from other components of the public health effort.

For all these reasons it is encouraging to note that plans are being laid by the National Sanitation Foundation, in cooperation with numerous official and voluntary agencies, to launch a nation-wide sanitation program. For the first time on a broad scale, attention is being given to the development of community interests in all aspects of environmental health, without which progress in the future will be painfully slow. It has been comparatively easy to apply a few successful control measures to protect water and milk supplies, or to eliminate insect- or rodent-breeding places. It is more difficult to control widespread hazards that result from human frailties.

As we enter into the era when chronic disease becomes a major public health problem, it is likely to be vital that everyone — not just the waterworks official or milk-plant operator or restaurateur—be concerned with environmental barriers against disease. The whole realm of sanitation practice in all likelihood will change dramatically during the next quarter century. A safe and healthful environment is now and will become increasingly important to the aging population.

It is important, therefore, that sanitation personnel be prepared to assume new responsibilities and deal with new problems. Public interest is likely to promote professional awakening. A nation-wide sanitation program will stimulate both.

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Justification of Expenditures for Local Public Health Services

A Brief Discussion of Criteria for Appraisal of Local Health Department Management and Community Fiscal Ability

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DURING the past three or four generations there has been a gradually accelerating interest in personal and community health.[1] This growth of interest and concern has reached such proportions that as much as 10 per cent of the total number of bills presented to state legislatures in recent years have had a direct bearing on some phase of health. It is not necessary to elaborate, in this connection, on the rapid growth of popularity of hospitals, the extension of full-time local health departments to more than two-thirds of the 3,000 counties in this country,[2] and the very recent spread of voluntary prepayment hospital and medical care plans to include more than 50,000,000 recipients.

As people have become aware of more of their health problems and potentials, they have required and demanded more in the way of health protection and medical care.[3] With increased demands has come the concept that all individuals have an inherent "right" to health and well-being, without regard to their ability to pay for the costs of this health maintenance. Partly as a result of this concept, there has been an increasing burden of health protection and maintenance services placed upon the shoulders of government—federal, state, and local.

Along with the increasing tax load for health protection has come the increased cost of almost every other function of government. The resulting competition for the tax dollar has become so keen that every function of government is being called upon to "justify" its cost of operation.[4] This is as it should be.

From a purely fiscal standpoint every dollar spent should be balanced by a measurable value received. Even in the area of services an honest attempt is made to place a monetary value on each unit of service rendered. In some areas, such as certain public health services, it becomes quite difficult and impractical, if not actually impossible, to establish a material value for such intangibles.[5] Under these circumstances the term "justification" takes on a somewhat different meaning. Not only do health protection services provide immediate value to the individual and community protected, but the fact that an epidemic, or a crippling disease has been prevented often continues to yield both tangible and intangible value to the individual and the community for years to come.

In proportion to the degree of the inability of a community to affix a definite value, or material "justification," to a service rendered, it becomes more urgent that it develop and apply other criteria of value to such services. Any such criteria are likely to be ex-

pressed in relative, or even negative, terms.

CRITERIA FOR APPRAISAL OF LOCAL HEALTH DEPARTMENT MANAGEMENT

One of the most pertinent approaches to establishing criteria for value received in this field of intangibles may be found in the principles of management employed by the local health department. With the growing burden of responsibility carried by the local health department has come greater ability in the application of sound business principles and personnel practices to this broadening field of public administration. On this basis adequate criteria are gradually being defined with regard to local health department organization, staff, financing, and facilities.[8, 20] The following discussion will attempt to outline some of the more obvious specific points on which criteria for measuring the effectiveness of local health department management may be based.

SOUNDNESS OF ADMINISTRATIVE ORGANIZATION

Before a sound administrative organization of government can be set up there must be sufficient legal authority for its existence. In addition to stating the general purpose or objective of the agency, the legal authority should make satisfactory provision for policy, financial, and administrative relationships within the government framework. This is no less necessary for local than for state or federal health agencies.

The function of policy formation should be distinct from that of administration.[10] This axiom is becoming more keenly appreciated as the administration of local health departments becomes more and more complex. The formulation of policy most often lies in the hands of a local board of health which is preferably composed of a representative cross-section of the responsible citizens of the community, and particularly of the groups most concerned with the supplying, financing, and utilization of the services provided. If and when such a board becomes concerned with details of administration, both the board and its professional administrator (the director of health) begin to get into unnecessary difficulties.

In the local health department the health officer, more appropriately called the director of public health, is the chief administrative officer whose responsibility it is to see that state and local public health laws and ordinances, as well as the general policies set up by the local board of health, are carried into effect. He, in turn, may find it necessary to delegate certain phases of this administrative responsibility to division or section heads directly under his personal supervision, particularly if the health department is a large one.[9] Such delegation of authority, however, does not excuse the director of public health from his responsibility for the overall administration of the health department.

If the local health department is to provide a maximum of service at a minimum cost, it must be organized along both efficient and practical lines. Staff and line functions should be clearly set forth so that the span of responsibility is not too great, care being taken to grant commensurate authority to responsible persons. Every worker should have a clear-cut knowledge of his own job, as well as its scope and limitations, so that he can perform smoothly as a useful and intelligent individual toward the unified objectives of the entire department.[10]

Every service performed by a member of the health department staff is an act in public relations. Therefore one of the most effective forms of good public relations is the performance of public health services on a high individual, professional, and community plane. In addition to providing services of good quality in a spirit of courtesy and under-

standing, it is essential to share information, plans and activities with the public. This is done not only through publicity but even more effectively through community-wide participation in all phases of the public health program. One of the most useful techniques in bringing about such community participation is by the development and judicious use of a community health council whose membership is drawn from a fair representation of the most concerned and able citizens of the community. Such a council would, through study, become familiar with local health problems and would assist in the planning, financing, and execution of any needed changes, through an enlightened public opinion.[11]

ADEQUACY OF STAFF

No local health department can hope to provide a high quality of health services and protection to the community without a sufficient number of trained and experienced professional, technical, and clerical staff.

The quality of staff personnel will depend primarily on three major factors, namely, general education and professional training, practical field experience, and personal temperament. A good quality staff is likely to produce a high quality result.

Desirable as quality of staff is, quality alone is not enough. There must be a sufficient number of high caliber workers on the job if the desired end results are to be attained. A minimum desirable requirement along the lines of the number of different types of personnel needed to deliver high quality local health services has been worked out by the American Public Health Association's Subcommittee on Local Health Units.

SUFFICIENCY OF FUNDS

Following a nation-wide study of the costs of operation of local health departments (1942–45),[7] it was found that minimum adequate health protection could be provided to local communities at an average rate of $1 per capita per year (at the 1942 cost level). Similar services today (1949) would cost from 50 to 70 per cent more.

The final cost in taxes will depend on two major factors. First, the kinds and amounts of services provided by the health department, and second, the amount of assistance in finances, services, and equipment made available for public health protection from private resources. Some communities are willing to get along with the bare minimum (or less!) of public health protection, while others are convinced that the expenditure of more tax dollars for additional health services is a wise investment of public funds.

One of the common errors in government is the very unrealistic attitudes of the citizens desiring a high quality public service, but being unable or unwilling to pay for it. Few fields of public service will disclose better examples of this error than those to be found in the provision of local public health services. On the other hand, few government services are in a position to make a better showing of value received for dollars spent, on a long-range community investment basis. It is for these reasons that no public health administrator should take on the responsibility of adequate community health protection and services, unless the community is both willing and able to finance the services it is demanding.

AVAILABILITY OF APPROPRIATE FACILITIES AND EQUIPMENT

A soundly organized and adequate staff with sufficient funds for action is still unable to produce desired results in community health protection without a well equipped, readily accessible, modern facility, in and from which to work.

None of us like to be reminded of the all too familiar spectacle, especially in rural areas, of the local health depart-

ment being cooped up in the darkest corner of the county courthouse basement or jail. Such cramped and ill-lighted, ill-heated, and ill-ventilated quarters must give way more rapidly to well ordered places "on Main Street, with modern furnishings and plate glass windows."

One of the most essential requirements for the assurance of adequate working quarters is the simple necessity of space. A wide variety of space requirements exists, if all phases of a community health program are to be served. For example, offices, examining rooms, class and lecture rooms, space for laboratory equipment, library, etc.

It should go without saying that up to date equipment is a necessity in the provision of up to date health services. The kinds and amount of technical equipment needed will depend on the size of the community and the types of health services to be provided by the local health department.

All public facilities are utilized to a greater extent when they are easily reached by all modes of local transportation, and when they are located centrally, near the downtown section of the chief city of the area served (or of the city most centrally located in the area served).

JUSTIFICATION OF EXPENDITURES

The mere acceptance of the principle that a community ought to provide itself with suitable measures of public health protection, is not in itself sufficient justification for the expenditure of large sums of tax money for health services. Neither is the acceptance of the principle that maintenance of the public health is a government responsibility. There must be some definition of the need for services, rather specific goals to be attained, evidence of community interest and willingness to finance the undertaking, as well as fiscal ability of the community to support an effective program of action, before any considerable expenditure for public health services can rightly be said to be "justified."

URGENCY AND SCOPE OF THE JOB TO BE DONE

What is the nature and degree of urgency of our community health needs? What is the extent of shortages of needed health facilities? How long have these needs gone unmet?

The actual status of community health is indeed a complex affair, embodying numerous factors focusing on both mass and individual health and environmental living conditions. The urgency of need for public health measures, then, will depend on the one hand, on the relative extent of preventable illness and death in the community, and, on the other hand, on the condition of the public and private water, milk, and food supplies, the completeness of insect and rodent control, sewage and refuse disposal, and the adequate control of other environmental conditions affecting health.

The assurance of community health protection is partially dependent on the housing, equipment, and transportation facilities available to the professional public health workers. The establishment and maintenance of such facilities will be costly, but they are necessary to the creditable execution of the job. A deficit in these facilities will curtail results.

Financial urgency accrues not only on the basis of the length of the list of needs for public health services, but also on the length of time for which these cumulative needs have gone unmet.

EVIDENCE OF ABILITY TO ATTAIN OBJECTIVES

Before the expenditure of large amounts of money for public health activities can rightly be justified, there should be reasonable assurance that such expenditures will provide the necessary means for reaching the desired objectives.

Unless there will be sufficient well trained professional, technical, and clerical staff, physical facilities, and modern scientific equipment to provide high quality public health services, the money spent will not be buying services at the greatest possible value rates.[6]

Another factor that will aid in guaranteeing the delivery of high quality services, is that of community interest. Widespread participation in public health activities, as well as public demand for services, indicates the extent of interest present.

RELATIVE FINANCIAL SUPPORT

Next to qualified personnel the most important single item required to bring public health protection to a community is adequate financial support. There is no cheap, and at the same time desirable, substitute for trained professional staff and modern efficient facilities. High quality health services are expensive but they have been proved to be a sound community investment.

In many local communities the health department is one of the more recently established departments of government. This may result in a very meager budget for this new department, in comparison to the funds available to other longer established ones. Such a condition places the health department under a definite handicap.[5]

While citing the public health expenditures of neighboring communities is not a valid justification for spending at a similar rate for health services at home, it does serve as one source of pertinent information. This is particularly true if the other communities in question are providing their citizens with the kinds and quality of public health protection desired.[12, 13]

FISCAL ABILITY OF THE COMMUNITY

Regardless of the need for public health services and the desire of the community to purchase such services, they cannot be provided to the community unless the necessary financial resources can be found to meet the cost. While many local communities may have certain legal restrictions on the amount of taxes that can be levied, if the desire for good health services is sufficiently widespread throughout the community, ways and means of getting the job done can usually be devised.[11]

Property valuation is one of the major factors on which is based the community tax structures, though there is wide variation among communities. Any process of valuation is a relative matter, and property valuation is no exception.

Communities with low valuation of property must usually submit to relatively high property tax rates, in order to meet the rising cost of government. Notable exceptions to this rule may be found in communities possessing other major revenue producers, such as public utilities, community owned real estate, etc. Conversely, a high property valuation will permit a low tax rate and still produce a similar amount of revenue.[14]

Stating this principle in another way one might say that, given a fixed property evaluation, the tax rate would increase proportionally as the amount of revenue to be raised by this method increases; on the other hand, a fixed rate could be maintained and still produce an increased amount of revenue, provided the property valuation increased. This relationship is often expressed by the following equation, AV $\times$ TR $=$ DPT, when AV represents assessed valuation, TR the tax rate, and DPT the direct property tax.

The extent of community indebtedness and the nearness to the limit of legal or fiscally sound indebtedness, will have a direct bearing on the community's ability to raise additional funds for the expansion and operation of governmental functions.

The cost of government, whether local, state, or national, has been increasing

steadily, and during the past twenty years especially the rate of increase has been greatly accelerated. This increase has been due, not only to the inflated costs of building materials, equipment, salaries, and backlog of needed repairs and capital outlay, but even to a greater degree to the popular demand for additional government services. Increasing costs of health department operation is no exception to the rule, since the same basic factors are involved.

In consideration of the major sources of income for the purchase of good community health services one should first look carefully to the resources of the immediate community. In addition to the property tax and other forms of local tax, including various types of fees, a considerable portion of the necessary capital outlay or operating expense may come from gifts, grants, bequests, and endowments of civic minded individuals and groups in the community.

Turning now to a more distant source of income (part of which, of course, has originated in the local community) the state is coming to share, to an ever increasing extent, the cost of providing local health services.[15] This state subsidy may take the form of shared taxes or "grants-in-aid" to the local community. Due to federal health legislation in recent years, more and more federal funds (which likewise originate in the local community) are also being made available to local communities for health services, through the offices of the state health departments.[16, 18, 20]

The desirability of developing appropriate formulae for the equitable sharing of federal and state taxes with local communities for health purposes, is rapidly becoming apparent. Several states with the assistance of representatives of local communities, have worked out such formulae (e.g., North Carolina, Oregon, Florida, California, Georgia, New York, and Tennessee). Taking the population served as the basic consideration, other factors usually entering into the calculations are such items as the proportion of infants and school children included, the number of people in the older age groups, the extent of special community health needs (such as tuberculosis control, venereal disease control, dental health, sanitation measures, etc.), per capita income, and the general fiscal ability of the community. These and similar factors may be expressed in terms of a weighted population. The weighted population is the principle followed in some states, and is comparable to the British block grant method of allocation of tax funds to local communities which has been in use in that country for more than twenty-five years.[16]

Community credit may be expressed in numerous ways. One of the strongest bases on which it lies is the community's actual financial status, i.e., dollar solvency. Another base is the stage of growth and development in which the community finds itself. Such other pertinent factors as climatic conditions, transportation facilities, home ownership, homogeneity of population, and the possibilities for healthful living, also have a bearing on community credit. But the foremost basis of community credit, too often overlooked, is the quality of responsibility and integrity to be found in those who administer and control the community's governmental affairs.[17]

As part of a summary of the subject of community credit, Frederick L. Bird, a few years ago, said, " . . . what a city most needs: governmental services and facilities which will make it as efficient a place as possible for carrying on of production and trade, will prevent it from passing into absolescence, and *will provide safety and health* and freedom from exploitation for its people."[17]

CONCLUSIONS

In summarizing some of the more

pertinent conclusions reached in this discussion of the justification of expenditures for local public health services, the following points might well be emphasized:

1. Due to an ever widening popular interest and participation in health matters, the practice of public health has become " . . . the science and art of preventing disease, prolonging life, and promoting physical and mental health and efficiency *through organized community efforts* . . . "
2. In setting up criteria for the appraisal of local health department management such factors as soundness of administrative organization, adequacy of professional and clerical staff, sufficiency of operational funds, and availability of appropriate facilities and equipment, should be considered.
3. The urgency and scope of the need for local health services form another real justification for the expenditure of funds.
4. The traditionally accepted principle of government responsibility for the health protection of all of its people cannot be overlooked.
5. Final justification of expenditure of funds for local public health purposes will depend on the community's own fiscal ability and other available resources.
6. The foremost basis of community credit is the quality of responsibility and integrity to be found in those who administer and control the community's governmental affairs (including public health administrators!).

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Prematurity as a Public Health Problem*

Administration of a Municipal Public Health Program for the Care of Premature Infants

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SINCE "premature birth" is the major cause of infant and neonatal mortality in the United States,[1] there is increasing agreement among public health workers, obstetricians, pediatricians, nurses, and hospital administrators that if the mortality rate in the first year and particularly the first month of life is to undergo appreciable further reduction, there must be intensive work on the problem of prematurity. It is obvious that the problem must be met with a twofold approach: (1) the prevention of prematurity by better obstetric care; (2) the provision of better medical and nursing care for the prematurely-born infant. This paper is limited to the second item. It discusses the administration of that portion of a metropolitan public health program which is designed to reduce infant and neonatal mortality by providing better care for premature infants. As will be evident, there is likewise emphasis on the prevention of prematurity by raising the standards of obstetric care.

ADMINISTRATIVE UNIT

It is logical that a public health program for prematurely-born infants, as part of a continuous series of activities designed to provide or improve care for patients during the antepartum, delivery, postpartum, neonatal, infant, preschool, and school periods, should be administered by the health department unit which is responsible for the maternal and child health programs. In addition it is advisable that the program should be intimately related to the maternity unit, because in a metropolitan area such as New York City the problem is, in the largest part, a hospital problem related to the birth and neonatal periods. Such administration in a maternity unit should not preclude, however, emphasis being given to the home care factors in later follow-up.

In New York City, the premature program is the responsibility of the Maternity and Newborn Division of the Bureau of Child Health and is part of the overall program for the improvement of care rendered to maternity patients and newly-born infants. The medical personnel of this division consists of a Division Chief who is a pediatrician, 2 half-time obstetric consultants, and 1 full-time and 1 part-time pediatric consultant. The Bureau of Public Health Nursing of the Department of Health has assigned 2 public health nursing consultants and 1 supervising

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nurse for the total division program, and 5 staff nurses especially for the premature transport service. In addition to the premature program, the professional staff has to devote time to the following duties: hospital consultation service to improve the quality of care given to all maternity patients and new-born infants in hospitals, technical supervision of the Department of Health's three maternity hygiene clinics; supervision of the few remaining midwives; organization of training institutes and other types of educational programs; and making of morbidity, mortality, and other studies related to the care of maternity patients and new-born infants.

In aiming for improvement in the hospital care of premature infants, two general approaches toward the objective exist: (1) working for the attainment of the highest standard of care in all maternity hospitals, or (2) concentrating on the provision of specialized care in premature centers. While the former approach might well be the logical long-time objective, the latter is being widely accepted as more realistic in most areas, at least for the present.

Even in the latter plan, however, the premature center takes its place as only one part of a threefold program, as follows:

1. Raising the standards of care for full term infants, as a necessary first step before good care for premature infants can be expected.
2. Providing in all maternity hospitals where infants are delivered, care sufficient to meet the immediate needs of a premature infant, at least during the temporary period before the infant can be transferred to a special premature center.
3. Finally, providing a high quality of long-term care for premature infants in special premature centers and safe transportation of such infants to the centers from home and from other hospitals.

STANDARDS AND REQUIREMENTS

Basic to the administration of any public health program is the establishment of quantitative and qualitative levels of the services to be rendered. A logical first step toward establishing such levels is the determination of optimum standards. Admittedly, optimum standards are not only beyond general attainment at the present time but also do not lend themselves fully to legislation. As an example, there is little point in setting a legal requirement that mothers be instructed how to care for their babies.

In New York City, a set of optimum standards entitled "Recommended Standards for the Care of Premature Infants"[2] were established with the advice and guidance of the Pediatric Advisory Committee to the Commissioner of Health and of a Nursing Subcommittee.

Since the highest level of care which is attained for premature infants would occur in the premature centers, such hospitals should be expected to come closest to reaching optimum standards. Toward that end, it is advisable to form the premature centers in a community into a working group which coöperates with the official agency in getting all centers as close to the optimum standards as is feasible and then agreeing that that level shall be necessary before payment can be received from the Health Department. Items which are not legislatable can nevertheless be successfully established by administrative decision when the support of the participating centers has been obtained.

In New York City, requirements have been drawn up for premature centers before they could be approved for payment. These requirements come close to the optimum standards, but certain items had to be compromised; i.e., the requirement that all nurses shall have been specially trained in the care of the premature infant. A training program is being provided, however, so that this requirement should be met within a reasonable time after a center begins to

receive payment. When funds become available to the City Health Department, centers will be approved with the help of an Advisory Committee and on the basis of the requirements drawn up.

Below the two levels already described, mandatory minimum requirements of two kinds might be established; (1) for the temporary care of premature infants in all maternity hospitals, and (2) for the long-term care of small premature infants. The former aims at the temporary protection of premature infants wherever they are likely to be born. The latter seeks special care only for the smaller premature infants on the assumption that the needs of the others, the larger premature infants, are reasonably approximate to those of full term infants. A line of demarcation might be set at 2,000 grams (4½ pounds), the exact figure varying with the stages of advancement of a community's hospital resources. Concomitant with the establishment of minimum requirements, which in effect necessitate a special program for the care of the smaller premature infants in premature centers, the enforcing agency is obligated to provide ready transportation to these centers.

In New York City, the section of the *Sanitary Code* governing the conduct of maternity hospitals is in the process of revision, and the above mentioned requirements for premature infants are being considered for possible incorporation into the revised code. The New York City Premature Transport Service, however, is already in operation.

HEALTH DEPARTMENT ROLE IN DEVELOPMENT OF SPECIAL PREMATURE CENTERS

1. *Assay of Community Need*

An assay of the community need in number of bassinets for premature infants in special centers is based upon previous experiences. The formula obviously is arrived at from that part of the following data which is available:

Trend in the birth rate

Premature birth rate experience in the community

Number of live births in hospitals which would house premature centers and in other hospitals

Weight distribution of premature infants in previous years

Infant mortality rate of premature infants by weight groups

Length of hospital stay of premature infants by weight groups (Table 1)

In New York City, the above data have been obtained from composite birth-death infant mortality punch cards, special premature infant punch cards, the EMIC program records, and from the Premature Transport Service experience, in addition to the usual vital statistics.

2. *Construction of Centers*

With the coöperation of the Hospital Council of Greater New York, the New York State Hospital Commission, and the U. S. Public Health Service, federal funds were secured by a number of hospitals to bear one-third of the cost of construction and equipment of premature centers. The New York City Department of Health has been able to participate from the beginning in the planning of the centers. Through a close working relationship with the Hospital Council of Greater New York, approval by the New York City Department of Health is required before the request for federal funds is approved by the Hospital Council. To date, 10 hospitals have been approved for such funds and a total of approximately $870,000 has been allocated, of which $290,000 is from the federal government.

3. *Aid to Hospitals in Planning*

Detailed consultation during the planning stages is given by the Health Department to the individual premature centers. Blueprints, lists of supplies, and outlines of policies on programs, personnel, and equipment have been reviewed.

TABLE 1

Length of Stay of Infant in Premature Center after Transfer to Center
First Six Months of Transport Service
November 1, 1948, to May 1, 1949

Weight Group at Birth	Group Who Died			Group Who Survived			Total Group		
	No. Babies	Total No. Hosp. Days	Av. No. Days per Baby	No. Babies	Total No. Hosp. Days	Av. No. Days per Baby	No. Babies	No. Hosp. Days	Av. No. Days per Baby
Under 1,000 grams	25	29	1.2	9	668	74.2	34	697	20.5
1,000–1,499 grams	17	101	6.0	52	3,103	59.07	69	3,204	46.4
1,500–1,999 grams	16	172	10.8	105	3,786	36.1	121	3,958	32.7
2,000–2,500 grams	6	8	1.3	38	940	24.7	44	948	21.6
Totals	64	310	4.9	204	8,497	41.6	268	8,807	32.9

4. *Staff Training*

In the beginning of any premature care program, a choice must be made, either of utilizing training facilities outside the area or of selecting the best premature center within the area and building it into a training center. In the New York City program, premature centers throughout the country have been used for work-experience for hospital nurses. It was soon realized that the training of the nursing staff without similar training of the pediatricians was of limited value for the functioning of a premature center. Through the coöperation of the New York State Department of Health and the U. S. Children's Bureau, a joint training program for pediatricians and nurses has been established at the New York Hospital. The staff pediatricians and nurses of given hospitals will be trained together. The trainees will then return to their hospitals to review and establish their own policies and procedures for the care of the premature infant.

The pediatric and public health nursing consultants of the New York City Department of Health as well as the nursing consultant of the New York City Department of Hospitals are available to assist the trainees in evaluation of, and where indicated, reorganization of the program in the hospitals of the trainees.

5. *Incubators*

Certain intangible values rest in the practice of the Health Department's furnishing or lending incubators to hospitals. Among these are good will and incentive to build a better premature center around efficient equipment.

If incubators are not furnished, the health agency should give consultation to the hospitals on the types of incubators to use.

6. *Financial Support*

The hospital care of a premature infant is costly to the hospital. This expense is of several types: initial cost of construction of the center, the reservation of space which would otherwise be earning income from other patients, cost of purchase and repair of equipment, the provision of specially qualified nurses in proper ratio to infants, and frequent necessity of providing oxygen and blood. In addition the high and unexpected bills result in a low proportion of family payment. One can hardly expect the hospital to absorb the financial burden.

The question is frequently raised of whether to pay an all-inclusive per diem rate for hospital care or a basic amount plus "extras." In the care of premature infants, it is hardly reasonable to label as "extras" items such as special nurses, or oxygen, or incubators, all of which are routine essentials in any adequate

premature service. The all-inclusive flat per diem rate therefore is a more logical method of payment.

Cost statements from hospitals in New York City place the present cost of "good quality" hospital care of a premature infant in the range of from $14 to $17 a day. It has been generally indicated by the voluntary hospitals that they would be able to establish centers if paid a flat rate of $12 a day.

In the administration of a program of payment to hospitals, a conspicuous factor is the uniformly emergency nature of the need for care which necessitates a mechanism for emergency telephone or retroactive authorization. Under previously determined conditions the authorizing agency commits itself to guaranteeing payment. When partial family payment is permitted, the hospital social service department makes the direct contacts with the family and recommends the amount of family payment, on the basis of a set of standards and formula established by the Health Department. The details of the payment plan being developed in New York City will be the subject of a separate paper.

TRANSPORT SERVICE

In many communities, in the absence of a public premature transport service, it is not an uncommon practice for certain hospitals to transfer some or all of their premature infants, to other hospitals which elect to receive such infants. In the early stages of a community premature program, one merely implants upon current practice, even though some receiving hospitals which may be used during this period may not be qualified to be approved as premature centers later.

The New York City Transport Service has been functioning since November 1, 1948, and is operated jointly by the New York City Departments of Health and Hospitals. This service is staffed 24 hours a day, 7 days a week, by 5 nurses who are assigned on a rotating basis, so that only one nurse functions at a time. The service has portable incubators and an ambulance, the interior of which was reconstructed to provide oxygen and additional heat. More detail on the operation of this service is described in another paper.[3]

A manual for the operation of the transport service has been prepared. The major items are: duties of the transport nurses, duties of the transport clerk, lists and care of supplies and equipment, and the establishment of policies for such circumstances as death of infant during transport, priority of transport, referral for nursing care in the case of a home delivery where the mother elects to remain at home, lack of heat or other health hazards in the home, handling of medical emergencies, management of infants with infection or in poor condition, etc. Priority of transport is based primarily on the weight of the infant, his condition, and our knowledge of the conditions of the place of the infant's birth. In general a home delivery is given priority over a hospital case.

In the first 10 months of the Premature Transport Service in New York City, a total of 454 babies were transferred to the Center, of this group, 351 infants (77 per cent) were patients of private physicians and the other 23 per cent were general service patients; 387 babies (85 per cent) were transferred from 59 different hospitals and 67 from home; 229 (50 per cent) babies were transferred during the first 24 hours of life. During the first 10 months of the service, 99 requests for transfer could not be met because of lack of a vacancy in a premature center. These statistics indicate several important facts:

1. That private physicians are using the service. Certainly the premature infant born of a private patient does not necessarily need less specialized care than that of the general service baby.

TABLE 2

Birth Weight Distribution of Infants Transferred to Centers November 1, 1948, to September 1, 1949, and Comparison with Premature Infants Born in New York City in 1948

	Transport Series		1948 Premature Births	
Weight Group	*Number Transferred*	*Per cent of Total Transferred*	*Number Born*	*Per cent of Premature Births*
Under 1,000 grams	71	16	563	4
1,000–1,499 grams	120	26	816	7
1,500–1,999 grams	196	43	2,231	17
2,000–2,499 grams	67	15	9,203	72
Totals	454	100	12,813	100

2. That 56 per cent of the hospitals in New York City feel the need of better care for premature infants and are requesting their transfer. Since 56 per cent of hospitals are transferring and 20 per cent are receiving, 76 per cent of the hospitals in New York City have demonstrated their approval of the service in one way or another.
3. That there has been a great tendency to request the transfer of infants immediately after birth, since 229 or 50 per cent were transferred in the first 24 hours of life. Delay in transfer of the remainder was due to several factors: the lack of a vacancy when the request was received; some hospitals expected that they could take care of an infant and only transferred when in difficulty; the cost of the infant's care was covered in the beginning by the mother's maternity care, and the hospital transferred when the cost was no longer covered.

Of the group transported 85 per cent weighed less than 4½ lbs. (2,000 grams) at birth, whereas only 28 per cent of the total premature births in New York City fall into these 3 lowest weight groups (Table 2).

It should be noted that 15 per cent of the infants transported were in the 2,000–2,499 gram (4½–5½ lbs.) group. These infants were transferred on a selected basis because of a special need, as is evidenced by the fact that the mortality of this weight group was equal to that in the next lowest weight group, contrary to what is found in an unselected series of premature infants.

Seven per cent of all premature infants who were candidates have been transferred to premature centers. The percentage of infants transferred increases as the birth weight decreases. Thus, approximately 25 per cent of the infants who were candidates in the two lowest weight groups have been transferred to centers (Table 3).

COÖRDINATION OF THE CARE OF THE PREMATURE INFANT IN THE HOSPITAL AND IN THE HOME

Instruction of parents while the premature infant is still in the center is an important function of the center. Therefore, premature centers should be planned so that such a program of instruction may be carried out. Through the coöperation of the Health Department and other community public health nursing agencies, a system should

TABLE 3

Portion of Premature Infants Transported in New York City

Weight Group	*No. Born in 1948*	*No. Born in Centers in 1948*	*No. Born in Other Hosp. in 1948*	*No. Trans. in 10 mo. period*	*No. Exp. To Be Trans. in 12 mo. period*	*% of Total Candidates Transferred*
Under 1,000 grams	563	212	351	71	85	24
1,000–1,499 grams	816	308	508	120	144	28
1,500–1,999 grams	2,231	839	1,392	196	235	17
2,000–2,499 grams	9,203	3,759	5,444	67	80	1.5
Totals	12,813	4,819	7,994	454	545	7

be established for a visit to the home prior to the discharge of the infant from the hospital and for a follow-up visit in the home after the baby's discharge from the hospital.

New York City has a new-born referral plan whereby infants delivered of primiparous patients on hospital services are visited in the home by public health nurses. The premature infant is one of the categories receiving priority for such visiting.

It is likewise important that there be continuing medical supervision for the premature infant as for all children. One would, therefore, expect that public health nurses would give particular emphasis toward keeping the premature infant under medical supervision. In the absence of a special follow-up clinic for premature infants, public health nursing follow-up is used. Such follow-up could be an ancillary method of case findings of infants who subsequently show visual, neurological or other disorders. Such infants would be referred to the Department of Health's Division for Handicapped Children.

STATISTICS

It is important that there be continuing evaluation of the effects of the program. Commonly used indices include neonatal mortality rates, and the number and percentage of all infants who die from "prematurity." A more refined and accurate index is the infant mortality rate among all premature infants by weight groups, which may be ascertained by the use of a combined birth-death punch card.

It is likewise important that there be comparable statistics in different hospitals. In order to do this, a sound uniform method of keeping statistics on premature infants is necessary in all the premature centers in the community. A study has been made in New York City which indicates wide variation in hospital methods of keeping records on prematures.

A more detailed description of such statistical methods will be the subject of another report.

SUMMARY

The report has described some of the administrative techniques in the development of an urban public health program for the care of prematurely-born infants, discussing such aspects as the establishment of standards and requirements, development of special centers, operation of a transport service, coördination of care in the hospital and in the home, and statistical evaluation.

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State Public Health Laboratory

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE

Prepared by
DIVISION OF HOSPITAL FACILITIES

In coöperation with
CONFERENCE OF STATE AND PROVINCIAL
PUBLIC HEALTH LABORATORY DIRECTORS
COMMITTEE ON LABORATORY QUARTERS
AND EQUIPMENT

THE state public health laboratory is one of the most important parts of the plan to provide coördinated health services for the people of our nation. In recognition of this importance, Congress has provided funds for assistance in the construction of this type of health facility through the Hospital Survey and Construction Act. Under this Act the Surgeon General is authorized to grant federal funds equal to one-third of the cost of construction and equipment.

The volume of work done by state laboratories has been steadily mounting during the past twenty years. In many states this work is being done in facilities that are outdated and inadequate. Located in makeshift quarters, they are usually poorly planned, crowded, unsafe, and generally undesirable for laboratory use. To anyone familiar with the field, it is apparent that the need is great for replacement of these existing inadequate facilities.

Prompted by the need for planning guidance for this highly specialized type of building, the Conference of State and Provincial Public Health Laboratory Directors appointed from its membership a Committee on Laboratory Quarters and Equipment. It was their function to develop general planning standards. To this end the committee has collaborated with the Division of Hospital Facilities, Public Health Service, Federal Security Agency, in the development of the suggested type plans presented herewith.

These plans are intended merely to

Plans developed by T. P. Galbraith
Technical Services Branch
Division of Hospital Facilities

FIRST FLOOR PLAN

assist the laboratory director and his architect in formulating a sound basic program for the solution of their particular problem. They serve also to explain the relationship of the various elements to be found in a laboratory building of this type and to illustrate some of the statements made herein. The basic requirements such as the type of laboratory work to be done, the allotment of space to each department, and local site conditions will vary so much that it would not be possible to develop a plan that would be suitable to all situations. It will be found that the departments and their component elements as shown in these plans will exceed minimum requirements of some states and be somewhat below those of others.

Maximum flexibility, simplicity of piping, and ease of expansion are essential in a laboratory building. It should be possible to rearrange spaces and equipment without making changes in the basic building structure or its mechanical and electrical systems. Such flexibility will greatly reduce the time and expense required to alter laboratory space as changes in character of work occur. It should be possible also to expand the building without disturbing the basic arrangement of the plan.

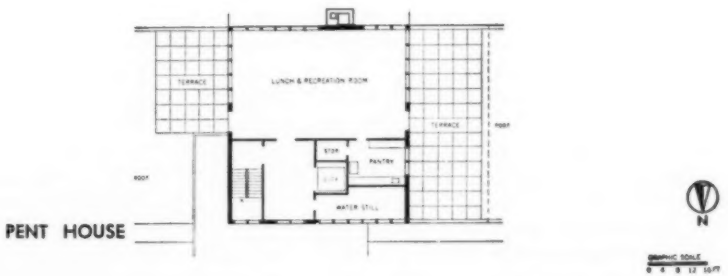
The accompanying plans illustrate this principle. The fixed facilities such as the elevator, main stairs, toilets,

"walk-in" refrigerators and incubator have been placed in a central location. The general services (glass washing, sterilizing and culture media) are located in the rear wing while the laboratories are in the two side wings. This arrangement will allow expansion of the general services and the laboratories.

Other solutions are possible, of course. An alternate plan has been developed by the Public Health Service in which the laboratories have been placed on the north side of one wing and the general services located on the opposite side. The administration and educational departments are located in a separate wing on the south side of the building.

The major services provided in the state public health laboratories at the present time are in the fields of bacteriology, chemistry, and syphilis serology. The manufacture of biologicals is done to a limited degree. Provision must also be made for research, teaching, central services, animal quarters, administration, and storage facilities. It is highly desirable to provide a separate main animal house. Where a virology department is required it, too, should be in a separate building.

Administration Department — The administrative offices should be separated from the other functions of the building. Placing them in a separate wing, as shown, eliminates unnecessary traffic through the laboratory areas and simplifies the piping systems. The laboratory shown here is for the use of the director



and assistant director in their research work. The other rooms are typical of the requirements of this department. In allotting area for the record room, provision for the micro-filming of records should be considered.

Bacteriology Department—The bacteriology department should be located near the general services because of the volume of sterilizing, glass washing, and culture media required in its work. Considerable refrigerator and incubator space is required, and in most cases the "walk-in" type is desirable. The preferable location for the refrigerators is near the water, food, and milk laboratory of the department. A separate incubator is suggested for tuberculosis work and at least one sterile room for the department is required. Generous provision of space for a research laboratory is highly recommended. In those laboratories which do a considerable amount of microscopic work, it may be desirable to provide a small room or alcove screened from the glare of natural light for this type of work. An office is needed for the head of the department.

Syphilis Serology Department—The syphilis serology department has the

largest volume of glass washing and therefore should have easiest access to general services. Separation of the specimen preparation in a room adjoining the laboratory is recommended. Adequate refrigeration is required within the department or nearby. Here again the department head should have an office. A laboratory for special tests and research should be given consideration.

Chemistry Department—The laboratory apparatus used in the chemistry department is delicate and complex and is usually cleaned within the laboratory. Therefore it may be separated from the general services and located on another floor, as shown, on the plans. Adequate refrigeration for the water, food, and drug laboratories is required.

Provision of a separate balance room adjacent to the industrial hygiene and food and drug laboratories is suggested. Such separation will protect the apparatus from fumes and eliminate vibration interferences which are present when this work is done in the laboratory itself. An instrument room, screened from natural light, is desirable. Both rooms should be accessible from the corridor as well as from the adjacent laboratories.

The water laboratories of the chemistry and bacteriology department are located one above the other. This allows a dumbwaiter connection between the receiving unit below and the two laboratories and speeds up movement of specimens among these areas.

An office and research laboratory are again suggested here, as well as supply room.

Biologicals Manufacturing Department—A department for the manufacture of biologicals has been included in the plans as a suggestion for those states where this work is contemplated. The department, including blood and blood products should be cut off from the other departments. A corridor door as shown on the plan is satisfactory. Separate facilities for glass washing, culture media preparation, sterilizing, packaging, refrigeration, and incubation should be provided for this department.

The type of biologicals manufactured and the laboratory space required will not be the same in most states and will vary from those shown on the plans. If smallpox and tetanus vaccines are to be prepared within the building these facilities must have a separate entrance and must not be connected internally with the other departments.

Where no manufacture of biologicals is to be done it is necessary to provide only adequate refrigeration including deep freeze and a storage room. These should be located near the receiving and shipping unit.

General Services—Location of the general services close to the bacteriology and syphilis serology departments which use them most will minimize traffic considerably.

It is suggested that the sterilizing areas be divided into two separate units, designated as clean and dirty. This arrangement provides separation between contaminated and clean areas. The dirty unit will be used in connection with the sterilization of glassware containing discarded cultures of pathogenic organisms, infectious material, animal cages, and similar material which should not be handled in the clean unit. The clean unit will be used in connection with the necessary sterilization of glassware after cleaning, culture media and similar supplies.

The culture media room requires a sterile transfer room and refrigeration, preferably the walk-in type as shown on the plan.

The supply room for the storage and daily issue of sterile supplies, general supplies, chemicals and glassware is used by all departments and should be centrally located.

Animal Quarters—If possible, the main animal quarters should be provided in a

separate building, so as to separate odors and the general activity within this element from the laboratory area. Animal rooms which are located in the building for the use of individual laboratories are most satisfactorily placed adjacent to the elevator as shown on the plan. With this arrangement the rooms can be serviced without using the corridor.

Outfit Units—Facilities for the receiving, shipping, specimen labeling, and preparation of outfit units may be separated from the main laboratory areas. They have been located on the ground floor convenient to the delivery entrance. Adequate refrigeration is required for the storage of specimens.

Storage, Shops, etc.—Central storage area should be provided on a generous basis. It should be located convenient to the delivery entrance with an issuing and receiving office controlling the entrance.

A shop for building and repairing apparatus used in laboratory work is a necessity.

In larger institutions the volume of work may justify the provision of a laundry to handle the linen supply. In most cases, however, only areas for the storage of clean and soiled linen will be required.

Where possible it is recommended that all service equipment be placed on the ground floor to eliminate special floor construction and vibration problems.

Research Library—A library is an important adjunct to laboratory research and should be provided in every laboratory building. A quiet location is necessary but it must be conveniently available to personnel from all departments.

Auditorium—A staff meeting room and library would be a minimum requirement for a state public health laboratory. Where feasible, however, an auditorium also should be included of sufficient size to accommodate all personnel. As located on the plans it is removed from the laboratory area yet easily accessible from all departments. A museum is also recommended.

Lunch Room—A room for eating of lunches, preferably located on the roof, will eliminate the necessity for eating in laboratories and offices and provide a welcome change of environment for personnel. Where practical, facilities for the preparation and serving of food may be provided.

Utilities—The provision of utilities (waste, cold water, hot water, gas, vacuum, compressed air, distilled water, and electricity) to the laboratories is the most complex problem in designing a building of this type. As stated before, the problem is simplified if the laboratories are concentrated and separated from non-laboratory areas which do not require these utilities. The piping and wiring should be easily accessible so that time and cost may be saved in making repairs or changes to any existing arrangement.

With the distributing mains located at the ceiling of the basement below the laboratories, placing the vertical utility lines alongside the structural columns which are located 16 to 20 feet apart in the exterior walls seems to be the most direct and economical solution to the problem. This location eliminates exposed piping at the ceilings of the laboratories and the cost of a dropped ceiling if the pipes are to be hidden. The vertical risers are available for connection to horizontal runs, yet concealed behind removable metal panels at the piers.

In order to provide maximum natural light and to avoid shadows in laboratories, the width of exterior wall piers should be reduced to a minimum. This may be accomplished by dividing the vertical laboratory utilities into three groups and alternating them in consecutive piers. Drain and vent lines should be provided in each pier so as to reduce the run to sinks. This arrangement would reduce the amount of piping and

be more economical to install and maintain.

Laboratories—Sixteen feet in width and twenty feet in depth has been used for the smallest laboratory in these plans. This size permits use of laboratory benches on the exterior wall and side walls to take advantage of the natural light and an island table 3 ft. 6 in. wide (without utilities) in the center leaving sufficient space for circulation. The horizontal utility runs may be located in the rear of the laboratory benches. A curb may be provided at the rear of each bench. The front of this curb should contain the utility outlets and a continuous electric outlet moulding. Such an arrangement simplifies cleaning the bench top and provides usable space at the top of the curb for reagents and small apparatus.

In the larger laboratories, where intermediate laboratory benches are required, it is recommended that they be placed at right angles to the exterior walls and joining the exterior wall benches. They should be accessible from both sides. This will make it possible to extend the horizontal utility runs to the intermediate benches without embedding them in the floor or running them along the ceiling below as would be required for island benches.

Corridor wall space can be utilized for storage cabinets, centrifuges, refrigeration, air conditioning ducts, and minor service lines.

The plans show continuous windows between piers and extending from the bench curb to the ceiling. Where the laboratory is air conditioned only a small section of the window area needs to be openable. This section should be screened. The type and materials of windows selected will depend on individual experience.

Use of movable partitions is recommended to provide flexibility in rearrangement of laboratories. They are available in various types and materials which are durable, easily cleaned, and attractive in appearance. Where continuous windows are used, window mullions should be sized to take the width of the partition selected. This allows a laboratory to be increased or decreased by the width of the window.

It is desirable to adopt a structural system which provides a flush and unobstructed ceiling area.

Fire Safety—Because of the nature of activity centered around a laboratory, suitable precautions should be taken to insure the physical safety of the employees. Construction material should be non-combustible or treated to retard the action of fire. Exit facilities should be arranged to afford each occupant an avenue of escape in case of fire. All stairways should be completely enclosed in fire-resistive partitions and provided with approved doors at each floor level. Exit stairways should discharge directly to the exterior or to a safe passage leading to the exterior.

Adequate provisions for the prompt extinguishment of fires should be readily available to each laboratory. Foam extinguishers are effective on incipient fires in ordinary combustible materials and in small quantities of flammable liquids or greases. The extinguishers may be located in the corridor so that a person will not have to travel more than 50 ft. from any point to reach the nearest unit. Two and one-half gallon units are commonly used although an equivalent amount of 1½ gallon units may be desirable since the smaller size is more readily handled by women.

Carbon dioxide or carbon tetrachloride extinguishers should be available where electrical equipment fires may occur.

Equipment—Refrigerators and incubators of the walk-in type are extensively used in many departments. Requirements as to capacity and location will vary with the arrangement of laboratory space and therefore this should be as flexible as possible. A demountable type

of construction is recommended since it is costly to change the built-in type. Standard equipment, such as laboratory benches, fume hoods, racks, storage cabinets, centrifuges, refrigerators, water baths, etc., are available commercially.

Finishes—Finish materials for the laboratory areas should be selected on the basis of the type of work done in each area and the kind of wear that may be expected. A poor choice of materials or use of inferior materials because of cheaper initial cost will result in unsatisfactory performance, high maintenance cost, and eventual replacement.

In general, all materials should be of a smooth, sanitary finish and readily washable. Laboratory floors should be of a resilient material, since workers in these areas are continually standing or walking. They should be stainproof and, in chemical laboratories, acidproof.

Culture media rooms, glasswashing rooms, sterilization rooms, acid cleaning rooms, and animal rooms require hard, non-slip floors which can take heavy traffic. They should be greaseproof and, since they must be frequently washed, waterproof and easily cleaned.

Walls of all laboratory areas should have a waterproof finish, painted or glazed at least to a point 5 ft. above the floor. The finish should be free of cracks or spaces which might harbor ants and roaches. In the sterile rooms, this finish should be carried to the ceiling, as it is necessary to wash down the walls at frequent intervals to maintain sterile conditions.

Ceilings may be plastered directly on the slab or the slab may be painted with a washable paint. Hung ceilings should be avoided to reduce vermin harborage.

Permanent Construction Records—Record drawings showing all details of the construction of the building should be furnished the laboratory upon completion of the construction. These should show the location of all walls, partitions, doors, windows, etc. All piping, valves, ducts and mechanical equipment, the location and size of all feeders and circuits, all electrical systems, such as fire alarms, conduits for telephone wiring, power wiring, special equipment and controls should be shown by plans and clarified by diagrams. Catalogues and operating instructions for all equipment should be assembled and bound.

This material should be kept in a fire-safe place. It will be found to be invaluable when repairs or alterations are undertaken.

MECHANICAL

Plumbing

The plumbing utilities (or services) generally provided in the various laboratory rooms consist of waste, cold water, hot water, vacuum, compressed air, gas, and distilled water.

Waste and vent risers at each pier will facilitate the placing of sinks, or equipment, conveniently within the working area of the laboratory rooms. Rearrangement of rooms will be simplified by providing 2 in. connections in both waste and vent risers on each floor level. Double sanitary tee connections, located immediately above the floor level in the waste risers, will permit branch waste lines to be installed parallel to the exterior wall. Outlets in the vent risers should be 5 ft. or higher above the floor level. Acid resisting materials are recommended for both waste and vent lines from the laboratory rooms. Concentration of acid wastes can be reduced by passing them through a diluting pit before entering the building sewer. Where it is necessary to install a sewage and waste disposal system for the laboratory building, acid wastes require additional treatment, or they must discharge into separate seepage pits.

Alternation of the vertical water, vacuum, air and gas risers has been previously suggested to reduce the width of piers. By supporting the horizontal run of piping on each floor level to the

building construction back of the work counters, the counters can be removed without disturbing the piping. A shut-off valve in each horizontal branch from the riser will minimize interruption of service to other floors. Since all the piping will be so located that, to replace, it would require the removal of the laboratory counters, it is suggested that the water lines be of a material which will give the maximum years of service for the quality of water available.

Vacuum, compressed air and gas outlets when mounted on the vertical portion of the work counter backs will facilitate removal of counters. These backs should be designed so that they are structurally independent of the counters and cabinets, thus permitting the removal of the base cabinets without disturbing the piping and outlets.

Water faucets of the mixing type will enable technicians to regulate the water flow at the desired temperature. Gooseneck spouts with removable serrated tips are recommended.

Distilled water systems with outlets in each laboratory room are desirable. Distilling apparatus and distilled water storage tanks must be located above the highest outlet to secure a gravity flow. Materials used in the processing, storage, and piping system for distilled water must not affect the quality of the water after distilling. Materials recommended for this service are aluminum or drawn 18–8 MO stainless steel.

De-ionized water is used in lieu of distilled water for certain processing. This system, without the degasifier operates under normal water pressure and does not have to be elevated. Piping systems of aluminum or drawn 18–8 MO stainless steel may be successfully used for systems handling de-ionized water.

Water services and distribution systems for laboratory buildings require protection against contamination due to backflow (back siphonage). The danger of siphoning contaminated water through the hose extensions attached to water outlets in laboratory rooms can be minimized by providing backflow preventers on each water outlet in all laboratory rooms. To assure protection to the municipal water supply system, it is suggested that the interior water distribution piping to the laboratory rooms be independent of the piping to other portions of the building. This system would be supplied with water through an air-gap connection either to an overhead gravity tank or to a surge tank ahead of the pneumatic water system pumps.

Safety showers are recommended for each laboratory room in the chemistry department. These showers can be located within the rooms or at strategic locations having immediate and easy access from the room. Shower heads of the flooding type will assure rapid drenching of the occupant. A chain extending down to near the floor level will permit operation of water stream from any position.

Heating and Air Conditioning

Flexibility for rearrangement of the various laboratory rooms is the essence upon which these data are prepared. Provision for such flexibility in the heating and air conditioning systems is expensive and the degree of flexibility attained would depend upon the funds available. The minimum degree of flexibility suggested would be achieved by arranging the radiation, air supply, air exhaust, and temperature control to permit the placing of partitions in laboratory rooms in line with the piers or the center of window openings.

Since most laboratory rooms have benches around their perimeter, the heating surfaces must be considered in conjunction with the laboratory equipment.

Cast iron radiators or convectors can be used successfully by concealing them

behind the work counters under the windows. This arrangement requires additional space between the heater enclosure and the wall, which can be accomplished by reducing the thickness of the exterior wall under the windows. Heater enclosures must also clear the horizontal plumbing service piping in back of counters. To confine the air circulation over the heating surface, it will be necessary to provide an enclosure around the heating element. Insulation around the heater enclosure is desirable. Since this type of heating depends upon gravity air movement through the heater, recirculating air passage is required under the counters. Room temperature can be regulated by an adjustable damper provided under the grille in the window sill, or by automatic temperature controls. The possibility of objects falling into the heater enclosure can be minimized by using grilles having streamlined openings. Accumulation of dirt particles on the heater element can be reduced by selecting a heater designed to permit the dirt to deposit on the floor where it can be removed through the recirculating air opening.

Panel heating lends itself readily to the problems encountered in laboratory rooms where the perimeter of the room is filled with laboratory counters. Precaution must be taken against overheating surfaces upon which personnel must walk or stand. When a surface temperature of over 84° F. is required to heat the room properly, provision of supplemental heat, either by ceiling panels or wall panels below the windows is suggested. Exterior walls or corridor walls are the preferable location for wall panels. Panels in separating partitions would make rearrangement of laboratory rooms extremely difficult. Metal radiant heating panels will allow more effective control with regard to sudden outdoor temperature changes. Since the occupants will be working on counters in front of the windows, down drafts must be overcome by providing heating surfaces under the windows.

It is generally agreed that air conditioning is desirable for laboratory buildings. When used, the system must not only provide for flexibility in relocating of partitions, but for flexibility in converting a laboratory room into uses where recirculation of air to other areas would be objectionable.

The air conditioning system must provide comfort without undue air movement during both the heating and cooling seasons. Generally, this cannot be accomplished when the air supply is designed for maximum heating or cooling loads. It is recommended that the total quantity of air circulated within a room not exceed 8 air changes per hour.

Air supply can be secured from systems employing individual room conditioners or from central systems with ducts to each room. With either system provisions must be made to exhaust the room air to outdoors when the laboratory room is converted to a use where recirculation of air would be objectionable.

Individual room conditioners will confine the recirculation of air to the room in which the unit is placed. The minimum amount of fresh air would always enter the room through the room conditioner and be exhausted to outdoors without recirculation to other portions of the building. Precautions must be taken to sterilize the exhaust air from virus or contagious disease laboratory rooms.

Central systems handling recirculated air would limit the conversion flexibility when recirculation of air is objectionable. To secure the same conversion flexibility, the central system would have to supply 100 per cent outdoor air. This would not only increase the installation cost considerably but would increase the cost of operation approximately fourfold.

Central systems could be used successfully where certain areas would be

assigned to laboratory rooms limiting recirculation of air. In these areas 100 per cent outdoor air would be supplied and exhausted without recirculation. Areas not imposing this limitation could be designed to handle a certain percentage of recirculated air. To confine recirculation of air to small areas, separate systems for each wing on each floor are suggested. Satisfactory air distribution within the room can be secured by using either the low velocity side wall outlets or ceiling air diffusers. It is imperative that neither the supply nor exhaust air system impose a condition which would force the air from one room to flow into another. The exhaust air from each room should pass through a duct system so arranged that the air could be exhausted to outdoors or a certain percentage could be recirculated. The corridor should not be used as a plenum chamber for room exhaust air.

Exhaust air from virus laboratories or laboratory rooms in which experiments are performed on contagious diseases requires sterilization before discharging into the atmosphere. Successful sterilization can be obtained by raising the air temperature to 600° F. by the use of gas or electric heaters. Since this process is very expensive, it is suggested that certain areas within the building be assigned to this type of work. The exhaust air from these laboratory rooms would be arranged to pass through the high temperature sterilizers. Air distribution system in combination with either panel heating, radiators or convectors is recommended for maximum winter comfort conditions. Since summer cooling generally requires a larger quantity of air, when air alone is used for cooling, the panel or radiant system could serve a dual purpose. In summer, chilled water could be circulated through the panel to serve as a radiant cooling system, thereby reducing the air quantity demands within the stipulated limits of 8 air changes per hour.

When the combination system is used it can be designed to introduce the air into the room during the heating cycle at temperatures varying from 65 to 75° F. Air temperature would be automatically adjusted according to the outdoor temperatures. The heat losses would be compensated by the radiators, convectors, or panel heating systems. Humidity can be introduced by water sprays or evaporators controlled at 50 per cent relative humidity by a humidistat in the exhaust air duct. During the cooling cycle the supply air temperature would regulate the relative humidity and could enter the room as low as 55° F. while the radiant cooling system would compensate for the sensible heat gain. In some instances, reheating coils will be required in the supply air system to prevent overcooling of rooms during humid or cool days.

Exhaust air up to 75 per cent can be recirculated, except from virus or contagious disease laboratory rooms, providing the air is thoroughly cleaned. Dry filters or viscose impregnated filters have been successfully used for removal of dirt from air streams. Finer particles of dirt can be removed by electro-static cleaners. Automatic filter cleaning devices are recommended for the larger installations.

Activated carbon canisters can be used successfully for removal of objectionable odors which may be present in either the fresh air or exhaust air stream. When used, the canisters require periodic reactivation and the desired results from this equipment can only be assured, providing a schedule of reactivating the canisters is maintained.

Since air exhaust from virus or contagious disease laboratories will discharge separately to outdoors, it is not considered essential that the recirculated air be disinfected. The successful use of ultra-violet rays or glycol vapors for disinfection of air depends upon proper

maintenance and controls. To date there is insufficient data available which would warrant the use of either system.

Laboratory hoods can be ventilated by using individual exhaust fans with separate ducts run through the roof or by connecting all hoods into one central exhaust fan. The central exhaust systems with fans located close to the discharge from the building will reduce the possibility of forcing dangerous fumes into the building. Provision of vertical flues parallel to interior columns in laboratory room section (a separate flue for each floor level) will facilitate the addition of future fume hoods. These flues should be constructed from materials not affected by acid fumes, such as cement asbestos or terra cotta.

Sterilizer equipment chambers, or areas subjected to intense heat, require exhaust ventilation. Mechanical exhaust ventilation is desirable for toilet rooms and areas which may become a source of odor nuisance.

Refrigeration

Where large quantities of materials are required to be stored under refrigeration, walk-in boxes are generally provided. Self-contained reach-in refrigerators, where only small quantities of materials are to be stored, will facilitate rearrangement of rooms. Where walk-in boxes are used, a central refrigeration plant with a stand-by compressor will assure uninterrupted service. These compressors can be located either in the basement or in soundproofed rooms adjacent to refrigerator boxes. Refrigeration load can be reduced by thoroughly insulating the refrigerator boxes. Since rodents are attracted to refrigerator boxes, it is imperative that the materials used in construction and insulation of refrigerator boxes be rodent resistant. Free circulation of chilled air within the refrigerator boxes can be assured by using forced air cooling units and slatted galvanized metal shelving.

ELECTRICAL

General—The electrical work for the laboratory building should be complete for all services required and of a design requiring the least amount of alterations in the event partitions are removed or relocated. All materials should be new and approved by Underwriters Laboratories, Inc., and so labeled, or certified to conform with the requirements of the Underwriters Laboratories, Inc. The installation should conform with local or state codes, or in the absence of such codes the National Electrical Code and related National Fire Protection Association standards should apply. Service connection of the supply feeder to the building should conform to standards of the local public service company.

Service—The service feeder should be sized for the actual load so that the voltage drop will not exceed that allowed by the applicable code. The service demand for general illumination and small appliances may be estimated as 3 watts per sq. ft. for the first 15,000 sq. ft. of floor area and 1½ watts per sq. ft. for areas in excess of 15,000 sq. ft. In addition to the demand for general illumination and small appliances there should be added capacity for large heating elements, motors and other power consuming devices as provided.

Suitable space, readily accessible, should be provided for the service switch and a main distribution panel, preferably in the basement, but as near as practicable to the load center. Space inside the building may be required for the Public Utility Company's metering equipment. Sub-feeders should be run from the main distribution panel to branch distribution panels on the various floors.

Panelboards and Switchboards — All panelboards and switchboards should be of the dead front type, enclosed in metal cabinet with hinged door and latch, and with schedule, under glass or other suit-

able transparent material, of all circuits connected and spares or diagram of circuits.

The lighting panels should be located on the floor on which lighting circuits are connected, and should also be so located that the cable distance of branch circuits will not exceed 100 ft. except for exit lights and fire alarm circuits. The location of panels in corridors is generally preferable to janitor's closets or similar enclosed spaces.

Overload Protection — Feeders and branch circuits may be overload protected by either automatic circuit breakers or fuses. Where plug fuses are used, fuses and fuseholders should be Type S. Edison-base fuseholders may be made to conform with Type S requirements by installation of adapters.

Switches — Automatic circuit breakers for power and light feeders, and for lighting and receptacle branch circuits are more expensive than fused switches, for the initial installation, but are preferable.

Wall mounted switches for local lighting should be used where practicable in preference to pull-switches, to reduce maintenance.

Lighting—The lighting of offices and corridors can be treated as similar spaces in other buildings. Laboratory rooms where instruments are read and color observations are required should be suitably lighted for the task. The lighting in all work spaces should be relatively free of shadows and designed for comfortable seeing. Discomfort from lighting is generally caused by direct glare from the fixture or reflected brightness from ceilings and walls. Supplemental lighting may be advantageously used for critical work areas. Where supplemental lighting is required, it should be provided by fixed units designed and located to eliminate, in so far as practicable, the need for portable units with extension cords on the floor or on the work area. Supplemental units, of the ceiling flush type with prismatic lens for directing the light onto the work area, are suggested for general bench work.

In offices and work areas, the tendency is toward fluorescent lighting which gives better diffusion and requires less wattage per footcandle. The first cost of fluorescent lighting is about double that of filament lighting; however, on an annual basis over a period of 10 years where first cost, maintenance, and power requirements are included, the total cost of fluorescent lighting per footcandle per hour is generally less than that of filament lighting.

In laboratory rooms where critical observation of specimen color is required, the light source should provide a color effect as near as possible to that in which such tests are ordinarily viewed. Daylight and filament lamp lighting have in the past been the most common sources of illumination. Filament lamps cover a rather wide band of the visible spectrum while fluorescent lamps, individually, accentuate some colors more than others. Where fluorescent lighting is used in the laboratory, the lamps should be of a color design favorable to the particular task. Practically any desired lighting color can be obtained by use of one or more staple fluorescent lamps. These lamps are generally catalogued for a color designation by a color name or the color equivalent in degrees K of a black body radiator. The color of natural daylight and some of the most common lamps are approximately as given below.

Sunlight, 4900 degrees to 6200 degrees K
Skylight, 8000 degrees to 90,000 degrees K
Filament lamps, 2500 degrees to 3200 degrees K
Fluorescent lamps, 6500 degrees (daylight), 4500 degrees (white), soft white (off color below 4500 degrees), 3000 degrees (warm white), and 3500 degrees K (white)

There are many shades of color classified as white. The 4500 degree fluores-

cent lamps are particularly good for creating a clean white room appearance, and the soft white and warm white are warmer colors favorable to human complexion and have wide commercial use in the display of meats. The 4500 degree white, soft white, and 3000 degree warm white may have use in laboratories where tissues or similar specimens are examined. The 3500 degree white commonly used in offices and similar spaces are less suitable for use in laboratories as colors viewed under these lamps such as the human complexion tissues and many of the foods do not appear natural. At high levels of lighting intensities the color effect is less noticeable than at lower intensities. Generally, the lighting of a laboratory building can be designed for a satisfactory compromise of lighting color which has a particular advantage of simplifying correct lamp replacements and minimizing stock of spare lamps.

The current recommended lighting intensity for the various areas of the laboratory building is given in the table below:

LABORATORY BUILDING ILLUMINATION

Space to be Lighted	*Current Recommended Footcandles*
Animal Room	10
Assembly Hall	10
Boiler Room	5
Conference Room	30
Corridor	5
Emergency Room:	
General	30
Examining & Treatment	200
Exits	5
Glass Washing	10
Laboratories:	
Close Work	60–100
General	50
Work Tables	50
Library	50
Lobby	20
Locker Rooms	10
Lunch & Recreation Room	10
Machinery Room	10
Museum:	
General	10
Local Display	50
Offices:	
General	30
Record Room	30
Vault	20
Pantry	20
Shops:	
General	20
Work Bench	50
Showers	5–10
Stairs	5
Sterilizing	30
Storage & Supplies:	
Bins, storage	10
General Storage Areas	10
Office	30
Receiving & Shipping	10
Toilets	10

Receptacles—Receptacle outlets should be provided in all places where plug-in service is likely to be required, to reduce the need for alterations and extensions of service after the building is occupied. Particular attention should be given to connections of gang outlets on the tables.

Fire Alarm—Where there are no local or state fire codes the "Building Exits Code" should apply. Where fire alarms are required, devices used in the system should be listed by Underwriters Laboratories, Inc., or Factory Mutual Laboratories, or certified to comply with the requirements of such listed devices. The city fire department should be consulted in reference to connecting the local fire alarm system with the city fire alarm system.

Control of Air-borne Bacteria—Precaution should be taken to prevent contagion by means of air-borne bacteria. Ultra-violet light rays in the spectral region of Å 2537 have been used in hospitals and laboratories to reduce the bacteria count in certain areas and to form an ultra-violet ray curtain of high intensity to prevent the passage of bacteria from one area to another. It should be noted, however, that the use of ultra-violet ray lamps for control of air-borne bacteria is still in the experimental stage.

As rays from these lamps are injurious to the eyes, the lamps should be used

only in fixtures specially designed for them, and installed so that the lamps will not be seen from any normal position in the room. These lamps have also been used in ventilating systems particularly where air is recirculated.

The bactericidal effectiveness of these rays decreases rapidly with increasing relative humidity above 55 per cent or 60 per cent. The use of these lamps in a workroom may be equated to ventilation with respect to reducing the bacteria count. In such areas the bacteria kill is expected to be less than 100 per cent as the air from non-irradiated locations must circulate and pass through the rays which are confined to the space near the ceiling.

Sterilization of air by means other than lamps also has possibilities. Numerous vapors have been shown under experimental conditions to have powerful bactericidal effect in air.

Tests and Inspections—After all wiring, switchboards, fixtures, and equipment are in place, they should be tested together and separately to determine that:

a. Conductor insulation resistance is not less than that recommended by the National Electrical Code.

b. The system is free from short circuits and other faults.

c. Motors rotate correctly.

d. All equipment operates correctly and as specified.

The following are members of the Committee on Laboratory Quarters and Equipment, of the Conference of State and Provincial Public Health Laboratory Directors:

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NOTE. An equipment list based on the plans included in this article is in process of preparation, and will be available from the Public Health Service when completed.

Joint Planning by the American Academy of Pediatrics and the American Public Health Association for the Development of School Health Services*

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THERE has been constant progress in the development of child health services over the years, even though it may sometimes seem almost imperceptible to those who are close to it. The most appreciable advances have benefited infants and children of preschool age, however, and claims that the school-age child has been passed by are not unwarranted. The school years are not distinguished for alarming death rates and even the incidence of acute illness is low when compared with older and younger ages. These children do have problems, however, and they are by no means inconsequential. Theirs is a period when physical handicaps take increased toll, when anticipated growth and development may be held back and when social and emotional maladjustments are likely to appear. At this time, when the child moves out from a family-centered life into the community and its increased hazards, his problems, though changed, are not less urgent.

There have been two occurrences in 1949 which forecast more rapid expansion of health services for older children. One of these was the wide support which the National School Health Services Act of 1949 received throughout the nation and in Congress. This Act did not differ radically from proposed school health legislation of previous years, yet there has been more enthusiastic support for expanding preventive, diagnostic, and treatment programs this year than ever before. Regardless of the disposition of this present bill or of subsequent ones, significant progress has been made when such wide recognition is given to the necessity for including the school child in health program planning.

The Report of the Study of Child Health Services,[1] published in April, was a second event in 1949 which augurs well for improved child health services. Here for the first time has been gathered a large body of accurate and recent facts which will serve as a guide in future extension of health services for children. The Study has a more important feature, however, in that the Academy initiated with it a long-term program "to assure preventive, diagnostic, and curative medical services of high quality which will make this country an ideal place for children to grow into responsible citizens."[1] The Study is thus a

* Presented at a Joint Session of the American School Health Association, and the Dental Health, Maternal and Child Health, Medical Care, and Public Health Nursing Sections of the American Public Health Association, at the Seventy-seventh Annual Meeting in New York, N. Y., October 28, 1949.

basis for future planning and not simply a demonstration of present conditions. In the case of school health services it became available at a most opportune time, when a nation-wide plan was already in view.

The findings of the Study confirm the need for expanded school health services. Half the counties in the nation, in which one-fifth of the country's children 5–17 years of age are found, lack medical services in a single school.

The Study disclosed other facts about school health activities which are even more disturbing. When there are no services available it is reasonable to expect that increased financial aid would bring improvement. But the inadequacies in existing programs, confirmed by the Study, are not due to lack of funds alone. For example, there are wide variations in standards for school medical services, especially with respect to the frequency and scope of examinations, and in priorities assigned to various screening procedures. Furthermore, the Study confirmed differing practices in division of administrative control and suggested that emphases in health services in schools depend to some extent upon the location of administrative leadership. The Study showed, moreover, that the bulk of medical services in schools having a health program was given by physicians not especially qualified by experience or training in the health supervision of children.

Shortly after the publication of the Study Report, after preliminary discussions between members of the A.P.H.A. Committee on Child Health and the Academy Committee for the Improvement of Child Health, a group of pediatricians was called together to consider the results of the Study in the light of probable support for increased services. In this conference there were representatives from several Academy committees and from this Association. There was general agreement that rapid expansion of school health programs would probably be jeopardized by inadequacies in dispensing child health services, and that planning for improvement in this field should begin immediately to keep pace with increasing general interest and support. There was accord on the need for coöperative planning by educators, public health workers, and pediatricians since the health needs of the child of school age are closely related to the functions of schools and to community health programs. Although the American Academy of Pediatrics was pledged to translating the Study results into constructive planning, that group was eager to join with the A.P.H.A. in coöperative planning to assure these other viewpoints.

A small group, with representatives from both the Academy and this Association, was informally organized at that time to continue consideration of these problems and to recommend to the Academy ways for improving the character of school health services. This unofficial joint committee, soon strengthened by addition of several representatives from the American Dental Association, has worked together steadily for about six months, much of the time under pressure of imminent enactment of federal legislation which would set the stage for nation-wide growth of school health services.

This is not the time to describe the discussions of this group in detail. However, it does seem fitting to refer to several conclusions and proposals upon which there has been agreement.

It is apparent that wide gaps exist between recent suggestions for school health services[2, 3] and the actual practice in local programs. The group concluded that those who carry out the programs either are not aware of recommendations or are not influenced by them. The committee thought that a restatement of recommended objectives and scope of school health services,

bearing the endorsement of the A.A.P. and the A.P.H.A. would have an advantage in reaching health officers and other physicians as well as dentists and nurses who, with professional educators, are responsible for the type of health services provided in schools.

The joint committee also agreed that a screening program in schools to demonstrate health needs is meaningless unless it be accompanied by an equally vigorous campaign to secure needed medical treatment. If funds, from any source, are available to assist those who are unable to secure treatment themselves, priorities in providing medical care will be required unless the resources are unlimited. The committee agreed that when funds are limited, priorities should be based on degree of interference with progress in school or growth and development, and upon prominent local health needs rather than upon prevalence of a condition or accessibility of treatment alone.

The need for joint planning in school health by education and health agencies was recognized and supported. Any project which takes place in a school is of obvious concern to the teaching and administrative staffs. Furthermore, cooperative planning is the only way to insure the valuable contributions of teachers in screening programs and in obtaining follow-through to medical attention. Health programs in schools, however, are also an immediate concern of health agencies since the child is a member of his family and of his community in addition to his association with the school. The feeling was quite general in the committee that medical care or treatment functions of a health service program for school children should be supervised by the health department to assure integration with other community health planning and to avoid duplication of services. The most satisfactory solution, in view of the manifold relationships in school health programs, might well be a joint administration or management, in addition to coöperative planning. In this connection, further study of those localities which already have joint administration would seem to be indicated.

One more factor, vital to continued improvement of school health, is constructive planning to advance the practice of child health supervision by those who actually conduct the programs. The Study of Child Health Services showed, for example, that medical services in schools are rendered almost entirely by general practitioners and health officers, most of whom cannot be expected to maintain an effective program without special preparation in the fields of child health and education. There is outstanding need for enlisting the help of pediatricians and others specializing in various fields of child health to guarantee high standards of child health services in schools and elsewhere. In discussing this question, it was agreed that provisions for preparing professional personnel for their work are necessary in all planning for expansion of school health services. This is not a program which can be carried out by any one professional group. Pediatric, dental, nursing, and educational organizations can make their greatest contribution by stimulating well qualified individuals locally to take a part locally in school health programs.

The concrete result of this coöperative planning by the A.A.P. and the A.P.H.A. has been the preparation of a statement on objectives and standards for carrying out school health services which could be presented to the various professional groups concerned as recommendations for improving this one aspect of child health services.

These recent coöperative discussions on school health among representatives of the American Academy of Pediatrics and the American Public Health Association are not an innovation. There are

individuals who are both Fellows of the Academy and members of the School Health Section, and frequently members of the Academy Committee on School Health have, by invitation, attended sessions of the School Health Section Council. Both organizations have also been represented at all the larger conferences on school health planning, but this most recent joint enterprise, unofficial as it was, has further demonstrated the value of sharing viewpoints and knowledge. At a time when inadequacies in existing services have been portrayed concurrently with widespread interest in expanded services, this coöperative planning has been more inspired and realistic than ever before.

Good health supervision of children in the school age is wanted more today than at any time previously because the magnitude of their undiscovered needs is coming into view. At this period in their lives, children come under the guidance of many different interests—home, school, and community. It would be impossible for any one of these alone to carry out the most effective health program. Each has some functions which it can do best and each has contributions to make to the others. For the benefit of school age children, we need to appraise once more the particular contributions which each group concerned with normal growth and development can make, and we need to set up some basic standards for guides. It is urgent that this be done now, lest the professions in health and education be unprepared to meet a growing petition for better services. The A.A.P. and the A.P.H.A., preferably working with one or more professional organizations of educators and with specialists in other health fields, should be able both to establish standards and objectives and to demonstrate that coöperative planning and mutual understanding are not simply trite phrases.

If a pattern could thus be established which would encourage similar joint planning between public health agencies, educators, and specialists in child health at state and community levels, the future of school health would be assured.

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2. *Suggested School Health Policies.* New York: Health Education Council, 1946, 46 pp.
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Other papers from the same session will appear in a later issue of the JOURNAL.

The Local Health Department

Services and Responsibilities

Draft of a proposed official statement of the American Public Health Association *

FOREWORD

THE American Public Health Association, in preparing this statement, has attempted to summarize as completely and concisely as possible those services and responsibilities which can be incorporated into efficiently organized and adequately staffed full-time local health departments. This is not a statement of an idealistic philosophy but a summary of a working plan, model in its structure yet sufficiently flexible so that, within the limitations of existent legislation, local health departments having initiative and interest may adopt it. While few local health departments at this time encompass all of these services and responsibilities, and while it is recognized that considerable variation will exist in different states and regions, it is expected that gradual evolution together with the passage of federal, state, and local legislation may bring about in many localities an ever increasing scope of activity such as is described in this statement.

The local health department is the basic service unit in the administration of public health. Through daily contact with the public the local health department obtains firsthand information concerning local health needs, and is responsible for providing its community with direct services. A unique combination of medical, dental, nursing, engineering, and other technical services, together with statistical, educational, managerial, and administrative skills, is made available through a full-time efficient and well staffed local health department. Its personnel is specially trained to utilize the health sciences in the public interest through effective community organization.

Further progress in the development of public health services is dependent not only on advancing knowledge in the health sciences but on the improvement of its application. This requires the establishment of new local health departments to provide nation-wide coverage, the strengthening of existing local health departments, the enlargement of their scope of service, and the development of highly skilled staffs. Local health units will meet their responsibilities most successfully if they have a program built on the needs of the people and the necessary facilities and qualified personnel with which to work.

Community health programs are not static but undergo a continuous process of change and development. The program of the local health department should be flexible, designed in terms of community health needs and resources, and capable of modification to meet new public health problems as they become recognized.

* This draft of a proposed official statement by the Association is published for the information of Fellows and Members and in order to promote discussion before the draft is finally brought to the Governing Council. Publication has been authorized by the Committee on Administrative Practice prior to final approval of the Report by the Committee.

This statement, if adopted, will supplant a portion of the Official Declaration of the Association called "Desirable Minimum Functions and Organization Principles for Health Activities" adopted October 9, 1940, and supplemented December 19, 1941, and January 29, 1943.

The concept of the services of the local health department has undergone considerable change. As a result of advancing medical knowledge and public health practice, there has been a sharp decrease in morbidity and mortality from infectious diseases, particularly in infancy and childhood and the early years of adult life. Because of the marked changes in the age distribution of the population and in the spectrum of our health problems, the theory and practice of public health has expanded to include not only prevention of the onset of illness, but also prevention of the progress of disease, of associated complications, and of disability and death.

The "desirable minimum functions" of local health departments—vital statistics, sanitation, communicable disease control, laboratory services, maternal and child health, and health education [1]—have been modified recently to include the control of chronic diseases.[2] Accident prevention, the hygiene of housing, industrial hygiene, school health services, mental health, medical rehabilitation, and hospital and medical care administration are other areas of service and responsibility which have been incorporated into the programs of an increasing number of local health departments. Definitions of local health services and responsibilities based on limited categories of activity have become quickly outdated as a result of this rapid development of health administration. It is essential, therefore, to define the optimal responsibilities of the local health department, to list the general types of service provided, and to indicate the specific methods utilized in the solution of local public health problems.

Responsibility for community health rests jointly on the local health department, the medical, dental and allied professions, the hospitals, voluntary health agencies, and the public generally. The health officer has an overall responsibility to the public in matters affecting community health; he meets this responsibility by rendering certain direct services and by providing stimulation and leadership to assure that other necessary services and facilities are made available by appropriate means. In order to achieve an effective program, the local health department should provide the following general types of service and utilize the following methods:

I. *Recording and Analysis of Health Data*

A variety of data is necessary to define and locate local health problems and assure sound planning for optimum health. These include information about the characteristics of the population, the incidence and prevalence of disease and impairment, and the disability and mortality resulting from them. Equally important is accurate information on the availability, utilization, and quantitative and qualitative adequacy of health personnel, facilities and services.

In order to obtain such information, the local health department utilizes various procedures, such as:

1. Recording and analysis of reports of births, deaths, marriages, divorces and notifiable diseases.
2. Maintenance of registers of individuals known to have certain specific long-term diseases and impairments.
3. Conduct of special surveys to determine the prevalence and resultant disability from various diseases.
4. Collection and interpretation of morbidity data from such sources as clinics, hospitals, organized nursing services, prepayment plans, industry, and workmen's compensation and disability insurance programs.
5. Maintenance of continuing records on the number and qualifications of all types of health personnel, the quantitative and qualitative resources of available facilities, and the types and extent of health services provided through various voluntary and public programs.
6. Periodic evaluation of community health needs and services.

II. *Health Education and Information*

An informed and educated public is one of the best guarantees of effective health service. The health department carries on an extensive and continuous program of public education and information on how to achieve optimum health, how to prevent illness and disability, and how to make use of available facilities and services. To this end the health department:

1. Stimulates the public to recognize health problems that exist, to study the resources available for meeting the problems, and to develop and put into action programs designed to solve them.
2. Coöperates with and assists official and voluntary organizations such as departments of education and civic, youth and other community groups in the development of their health programs.
3. Provides individual instruction by public health nurses and other personnel, as in the case of families in which communicable disease has occurred, of mothers attending well baby conferences, or of diabetic and other patients who are taught to follow the regimen prescribed by the family physician.
4. Organizes lectures, classes and courses, such as mothers' and fathers' classes, courses for foodhandlers, classes for diabetics, and lectures to community groups.
5. Uses mass educational and information media, such as newspapers, magazines, pamphlets, movies, radio, and television.

The health department is also responsible for developing a well rounded program of professional education, designed to assist the local health professions to maintain and improve the quality of service. A variety of methods are used for this purpose, including distribution of literature, arrangement of lectures and postgraduate courses, and encouragement of organized educational relationships with medical schools and teaching centers.

III. *Supervision and Regulation*

The local health department has supervisory and regulatory responsibilities covering various fields, such as the protection of food, water, and milk supplies, the control of nuisances, the sanitary disposal of wastes and control of pollution, the prevention of occupational diseases and accidents, the control of human and animal sources of infection, and the inspection of hospitals, nursing homes, and other health facilities. In carrying out these functions, health departments use a variety of methods, of which probably the most important is public education and individual instruction. Others include the issuance of regulations, laboratory control, inspection and licensure, revocation of permits and, as a last resort, court action.

IV. *Administration of Personal Health Services*

Local health departments should be responsible for the provision or administration of a variety of personal health services. These include:

1. Immunization against infectious diseases and other preventive measures such as the application of fluorine to children's teeth.
2. Advisory health maintenance service, as in child health conferences, prenatal clinics, and parents' classes.
3. Case finding surveys of the general population, such as chest x-ray surveys, serological tests for syphilis, cancer detection programs, and school health examinations. Adult health inventories and "multiphasic" surveys for the detection of various groups of diseases may also be included.
4. Provision of diagnostic aids to the physician, such as laboratory services and crippled children's, cancer, cardiac and other diagnostic and consultation clinics.
5. Provision of diagnostic and treatment services for specific diseases such as syphilis, tuberculosis, dental defects in children and expectant mothers, and orthopedic, cardiac and other crippling impairments in children.

There is a definite trend toward increased local health department responsibility in the control of chronic diseases, in the development of mental hygiene services, in the provision of bedside nursing care in the home, in the expansion of health services for school children, and in the administration of public

programs providing general medical care for designated groups of the population.

Effective administration requires that all official health programs be integrated in a single responsible agency. As new programs of public medical care are developed, therefore, their administration can logically be entrusted to the local health department. The well organized and adequately staffed local health department is fitted for this task because of its strong combination of medical and organizational skills, its accustomed responsibility for a public trust, its emphasis on promotion of health and prevention of disease, and its understanding of the organizational elements required to achieve a high quality of care.[3–5]

V. *Operation of Health Facilities*

The local health department can fulfil its responsibilities most effectively if it operates one or more well equipped health centers providing adequate space for administrative offices, clinic facilities, and an auditorium or classrooms for public and professional education. Health departments may also carry direct responsibilities for the administration of general or special hospitals.

VI. *Coördination of Activities and Resources*

In addition to administering specific programs and rendering direct service, the local health department has the general responsibility of providing effective leadership in meeting all types of community health needs. The health department should make available its technical and administrative resources to provide accurate data as a basis for sound planning, to help inform and educate the public, and to assure that the necessary measures are taken by public and private agencies to improve and coördinate the community's health facilities and services. A primary task of the local health department should be to encourage the fullest possible coördination of the work of the various official and voluntary agencies so as to avoid unnecessary duplication and overlapping both in types of activity and in geographical coverage, and to assure efficient and economical administration of both public and private funds for health.

There are numerous examples of excellent health department activity along these lines, such as the development of combinations of voluntary and official nursing services[6]; action to coördinate the activities of the health department, voluntary agencies, hospitals, and the medical profession in emergencies such as epidemics of poliomyelitis or disasters due to flood, fire, etc.; coördination with departments of education, the medical and dental professions, service clubs and other agencies to improve school health services; and the development of organized community action to obtain needed additions and improvements in local facilities such as general hospitals, chronic disease facilities, rehabilitation centers, and the like.

Effective implementation of this general responsibility requires that local health department personnel should in every respect be members of the community in which they live and work, and should participate actively in community functions in health and other fields. It requires also that the local health department maintain close coöperative relationships with the medical and other health professions, voluntary health associations, public and private educational and social welfare agencies, and community organizations such as business, farm, labor, and other consumer groups. The most effective expression of such coöperative relationships is achieved by a broad community health council which represents these various groups and provides an organizational basis for close coördination of activities and resources.

HEALTH DEPARTMENT ORGANIZATION AND STAFF

The local health department should have the status of an executive department of local government, administered by an executive director who is a full-time medical health officer with formal training in public health administration. The health officer should be advised by a board of health whose members are representative of the various groups and health professions in the community. The board of health should, because of its official status, be constituted with at least half its members representing the public interest. In addition to advising and assisting the health officer, the board of health may enact local regulations.

As executive director of the local health department, the health officer should be primarily concerned with the development of plans and policies, the provision of overall guidance and stimulation to his staff and the effective coördination of their activities.

The varied functions of the local health department require the utilization of different types of specialized personnel. The types of personnel needed depend primarily on the scope of services, and may include public health nurses, engineers, sanitarians, laboratory workers, health educators, statisticians, physicians, dentists, social workers, office managers, clerical personnel, medical care and hospital administrators, and so forth. They should be employed in sufficient numbers to meet community needs, and this in turn depends on the characteristics of the community, the nature of its specific health problems, the size of the population served, and the comprehensiveness of the services provided. The staff of the health department will be effective only if they are well trained, well paid, chosen on the basis of a merit system that is responsive to the special needs of public health service, and provided with adequate leadership on the part of the health officer.

RELATION TO STATE (PROVINCIAL) AND FEDERAL HEALTH AGENCIES

The local health department has no direct relationship or responsibility to federal health agencies. All relationships between local health departments and federal agencies are carried on through the medium of state or provincial health departments.

The local health department is accountable to the state health agency for adequate performance of those programs which are delegated to it by state law or regulation. It must meet the minimum standards set by the state health department and should be subject to state supervision.

On the other hand, local health departments should be allowed ample scope for the initiative and creative activity of the health officer and his staff. A primary responsibility of the state health department is the strengthening of local health departments in terms of personnel, facilities, services, and prestige. To fulfil this responsibility, the state health department should:

1. Provide a state-wide coördinated public health program with clear objectives for the guidance of local health departments.
2. Develop an appropriate plan for the coördination of local health services with related hospital and medical programs which may be developed on a regional basis.
3. Provide financial assistance to supplement the resources of local health departments.
4. Make consultation and other special services available.
5. Assist localities to set up demonstrations on a temporary basis.
6. Establish minimum and stimulate optimum standards of performance.
7. Develop a recruitment and training program for local health department personnel.
8. Delegate certain legal responsibilities of the state health agency, in so far as feasible and practical, to well organized and adequately staffed local health departments.
9. Carry on all relationships with local citizens and groups through the medium of or in coöperation with the local health department.

Local health departments should be given a voice in the determination of policies and plans for the development of state public health programs. This can best be accomplished by the state health department through regular meetings with the health officers and other personnel of local health departments. Such meetings, similar to those conducted by federal health agencies with the state and territorial health officers and state directors of various health programs, can do a great deal to clarify relationships, achieve closer coördination of programs, and enlarge the responsibilities and strengthen the role of the local health department.

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2. National Health Assembly, *America's Health*, New York: Harper, 1949, p. 79.
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Short Course in Air Pollution

The School of Public Health, University of Michigan, Ann Arbor, announces a first inservice training course in air pollution on February 6, 7, and 8, 1950. It will present "an orderly review of the problem in the light of present knowledge" and will cover the general topics of "(1) Identification of the problem, (2) The tools used in investigation and determination of solution of problems, and (3) The approach employed in solution of some of the problems involving common industrial and other sources of air pollution."

Further information from Henry F. Vaughan, Dr.P.H., School of Public Health, University of Michigan, Ann Arbor.

Public Health Degrees and Certificates Granted in the United States and Canada during the Academic Year, 1948-1949

THE Committee on Professional Education for the 16th consecutive year presents its annual report of Public Health Degrees and Certificates Granted. This is the second year in which more detailed information on public health engineering students and degrees was secured and tabulated by the Engineering Section Project staff. Last year's study of undergraduate students and degrees in sanitary engineering has also been continued.

Again, as in previous years, only summary tables are included in this report. More detailed tabulations are available in mimeographed form on request from the Association offices.

The report is based on material submitted by the administrative officers of the schools on questionnaires which have been subjected to statistical review only. Except for the special material on undergraduate engineering students and degrees, tabulations are shown for what are considered graduate students only; masters degrees or higher for public health and public health engineering students; baccalaureate degrees or certificates or equivalent for public health nursing. The National Organization for Public Health Nursing which prepared the data on public health nursing students and degrees has given permission for their use in this report.

The three groups of schools from which data were received are 18 schools giving public health degrees of various kinds including the 10 schools of public health accredited for the Master of Public Health degree by the American Public Health Association, 35 offering public health engineering or sanitary engineering graduate degrees, and 38 approved programs of study in public health nursing or approved basic curricula. The same university may, and frequently does, appear in all three categories.

ENROLLMENT

Student enrollments in both graduate public health courses and in public health engineering or sanitary engineering courses have changed very little from the previous year, though they are higher than during the war years when potential recruits were drained off into war activities. Although enrollment in public health engineering courses dropped slightly, that in schools of public health and in other public health courses in universities increased somewhat. The 915 students enrolled in graduate non-engineering public health courses is the largest number recorded in the 16 years during which material on this point has been collected. Three schools, though prepared to grant degrees, reported no students enrolled.

The increases in public health students have been not among physicians, the profession among which there is obviously the greatest shortage, but among health educators and teachers. Physicians decreased in absolute numbers from 302 to 261 and in percentage of total enrollments from 40 to 29 per cent. Enrollment of public health educators although increasing overall by one-third from 140 to 187, remained practically constant in the schools reporting in 1947–1948; the increase is due to three schools not hitherto reported as granting graduate public health degrees other than the M.P.H.

The large increase in teachers enrolled for public health degrees other than the M.P.H. is also because of the additional schools reporting.

Another aspect of the decreasing numbers of physicians is discussed in a report of Professor C.-E. A. Winslow in connection with the accreditation of schools of public health. Of the students registered in the 10 accredited schools at the beginning of the academic year more than half were physicians. Of the physicians, however, fewer than one-fifth were new recruits to the profession for practice in the United States, while more than 40 per cent were students from foreign countries here for educational purposes or those already in public health service or in service with the armed forces.

Nearly 15 per cent of students enrolled for public health degrees in the reporting schools were hospital administrators, a comparatively new field of graduate work in schools of public health; 49 hospital administrators were enrolled for graduate degrees in 1947, 94 in 1948, and 133 in the current year. Of the total hospital administrators enrolled nearly one-fifth were physicians.

In the current year 30 of the 35 schools reportedly offering graduate degrees in public health engineering or sanitary engineering enrolled students for such degrees. Enrollments in the schools dropped from 313 in 1948 to 283 in the current year, but remained higher than in any other earlier year. In one university only half as many students were enrolled for graduate public health engineering courses as in the previous year.

DEGREES GRANTED

Public health graduate degrees were granted to 575, two-thirds of the 915 students enrolled. Two-thirds of these received the Master of Public Health degree or its Canadian equivalent, Diploma in Public Health. The Master of Public Health degree was offered and awarded only by the ten schools accredited for this degree by the American Public Health Association. Seven of these schools in 1948–1949 were also accredited for the Dr.P.H. degree with a total enrollment of 12 for this higher degree. All but one-sixth of the total non-engineering degrees were granted by the 10 schools accredited for the Master of Public Health degree.

Among the public health engineering and sanitary engineering students, 152 of the 283 enrolled received degrees, slightly more than one-half. The total students receiving degrees decreased from 179 the previous year.

Public health engineering degrees do not show a greater variety than in the previous year but there are still numerous degree titles so similar as to suggest that they may be basically the same degrees with no more differences than are to be expected in different universities. The degrees most frequently granted were Master of Science in Sani-

TABLE 1

Enrollment in Graduate Public Health Courses and Students Receiving Graduate Degrees or Certificates, Five Year Summary, 1945–1949

	Enrollment			*Students Receiving Degrees and Certificates*			
Academic Year	*Total*	*Public Health*	*Public Health Engineering*	*Total*	*Public Health*	*Public Health Engineering*	*Public Health Nursing*
Total	4,524	3,452	1,072	9,668	2,262	565	6,841
1944–1945	540	462	78	1,204	270	38	896
1945–1946	730	607	123	1,468	353	63	1,052
1946–1947	999	724	275	2,078	536	133	1,409
1947–1948	1,057	744	313	2,408	528	179	1,701
1948–1949	1,198	915	283	2,510	575	152	1,783

TABLE 2

Number of Graduate Public Health Degrees or Certificates Granted, Five Year Summary, 1945–1949

Degree or Certificate	*Total*	*1944–45*	*1945–46*	*1946–47*	*1947–48*	*1948–49*
Total	9,668	1,204	1,468	2,078	2,408	2,510
Doctor of Public Health	40	8	3	6	11	12
Doctor of Science	29	—	3	4	8	14
Doctor of Philosophy	16	4	4	3	4	1
Master of Public Health	1,447	140	216	361	400	330
Master of Science	363	17	31	132	92	91
Master of Science, Public Health	204	68	56	48	18	14
Master of Health Education	18	—	—	—	8	10
Master of Hospital Administration	29	—	—	—	11	18
Master of Science, Public Health Engineering	34	—	—	—	19	15
Master of Science, Sanitary Engineering	119	—	16	22	35	46
Master of Science, Civil Engineering	25	1	1	10	12	5
Master of Civil Engineering	33	1	1	4	14	13
Master of Applied Science	17	—	3	—	9	5
Master of Sanitary Science	66	18	18	20	—	10
Master of Arts	42	—	—	—	—	42
Master's Degree (Nurses)	607	32	136	175	126	138
Diploma, Public Health	154	22	34	31	22	45
Diploma, Veterinary Public Health	26	6	4	2	9	5
Baccalaureate Degree (Nurses)	3,546	392	429	611	1,014	1,100
Certificate, Public Health	13	2	4	2	1	4
Certificate, Medical Technology	79	14	12	13	20	20
Certificate, Public Health Nursing	2,687	472	486	623	561	545
Licensee Hygiene	20	—	—	—	—	20
Other	50	7	11	11	14	7

tary Engineering which was granted to 30 per cent of the 152 students receiving degrees; Master of Science, to 20 per cent, and Master of Public Health to 10 per cent.

For the 8th consecutive year the number of public health nursing students receiving degrees or certificates increased so that the number currently completing their programs of study is 148 per cent greater than in 1941–1942, but less than 5 per cent greater than in 1947–1948. The 1,783 degree or certificate students are the largest number ever recorded since public health nursing figures were first included in these reports in 1937.

During the past year one university was added to the list of those with basic professional nursing curricula leading to a bachelor's degree. Nevertheless the students in this category receiving degrees decreased by one-third. As a matter of fact the number of degrees or certificates granted decreased in one-third of the schools offering such public health nursing degrees or certificates.

ARE FACILITIES OF SCHOOLS OF PUBLIC HEALTH FULLY USED?

Some of the accredited schools of public health during the past year trained fewer students than they have in recent past years. One school, for example, had 30 per cent fewer students enrolled than in 1946–1947 and granted nearly 30 per cent fewer degrees. Another has dropped by about 55 per cent in enrollment and in number of degrees granted since 1944–1945, its high point in post-war students. This may indicate that the schools of public health are not being used to full capacity. The reasons call for prompt, intensive study in the recruitment program proposed by the A.P.H.A. Certainly, one line of inquiry

TABLE 3

Schools Reporting, Degrees Offered, Students Enrolled and Receiving Baccalaureate Degrees in Sanitary Engineering or Sanitation, Academic Years, 1947–1948 and 1948–1949

	Sanitary Engineering		*Sanitation*	
	1947–1948	*1948–1949*	*1947–1948*	*1948–1949*
Schools offering degrees	33	31	7	6
Different degrees offered	11	8	6	4
Students enrolled	352	499	67	106
Degrees granted	138	181	23	34

should be the teaching of preventive medicine in medical schools.

UNDERGRADUATE TRAINING FOR PUBLIC HEALTH IN ENGINEERING SCHOOLS

For the second year information has been secured on undergraduate training in engineering schools or engineering departments of universities for public health positions in sanitary engineering or sanitation. It must be considered that the data are still in the experimental stage. Not enough study has yet been made of the separate courses and the degrees offered to know whether the data are comparable as between the various schools and whether the figures represent the total undergraduate pool from which environmental sanitation personnel might reasonably be expected to be drawn. The shifting of schools from one degree category to another in the course of the year also suggests the need for closer scrutiny of degree titles. Students enrolled and receiving degrees for both sanitary engineering and sanitation baccalaureate degrees increased by more than 40 per cent as indicated in Table 3.

As in the previous year the undergraduate questionnaire included a query about the extent of vocational guidance given to undergraduates. This question was left unanswered by most schools indicating a dearth of such guidance. A number of schools reported that guidance was given when requested, and one school that students were informed of sanitary engineering possibilities in the sophomore year both through lectures and personal guidance.

Although limited in significance, the material on undergraduate training may, however, suggest that recruitment possibilities among college undergraduates and thus also high school students have been largely untapped.

W. P. SHEPARD, M.D., *Chairman*
Committee on Professional Education

NOTE: For previous reports see Vol. 39, p. 70; Vol. 38, p. 86; Vol. 37, p. 67; Vol. 35, p. 1311; Vol. 34, p. 1264; Vol. 33, p. 1430; Vol. 32, p. 1360; Vol. 31, p. 1306; Vol. 30, p. 1456; Vol. 29, p. 1338; Vol. 28, p. 863; Vol. 27, p. 1267; Vol. 26, p. 819; Vol. 25, p. 341; Vol. 23, p. 1124.

Directed Gradualism in the Field of Medical Care

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NEARLY two decades ago, when the general problem of medical care began to attract attention in the United States an indignant practitioner said, in a mood of petulance, "If these agitators keep saying, 'something must be done—something must be done'—the public will begin to think that something *must* be done!" It is fairly clear in 1950 that "something must be done." To some of us, it seems evident that, if that "something" is to amount to "anything," it must rest on a basis of orderly prepayment; and that this prepayment must—in some form—involve contributions, from the public purse or from the more prosperous insured persons, toward the provision of service to those unable to carry the full cost of their own medical care.

On the other hand, there are many serious students of this subject who could not view with equanimity the adoption by the United States, overnight, of a complete and comprehensive program of national and all-inclusive compulsory insurance.

Our British friends had thirty years of experience with a limited plan of compulsory insurance before their present program was adopted. That program has been, in the main, successful; but it has involved serious strains and stresses which could perhaps have been avoided by a less radical approach. To leap from nothing at all, in this country, to any such comprehensive program would involve both practical and psychological difficulties of the greatest complexity, which could scarcely be surmounted in any five year "tooling-up" period.

The Committee on the Cost of Medical Care, in 1932, recognized that inclusive compulsory insurance was probably the ultimate alternative to "state medicine" in the solution of this problem. It did not, however, recommend that solution; but suggested preliminary accumulation of experience with group practice and group payment to provide the basis for wise future policy. Unfortunately, misguided opposition to any change whatever in the status quo has seriously hampered the progress of experimentation. Some notable demonstrations have, however, been made. Blue Cross and Blue Shield plans have helped the more economically fortunate to budget for certain parts of their medical bill. The State of Maryland has provided an orderly system of medical care for the indigent. The Health Insurance Plan of Greater New York has given us an example of an admirably complete program developed under particularly favorable local circumstances. The EMIC experience has shown us how effectively and economically a national program for the care of maternity and infancy can be put in force. The State of Washington has demonstrated how a medical care plan should *not* be set up.

It seems clear that the mounting force of public opinion now demands some action on a national scale. If this be the case—and if the attempt to solve

the entire problem of medical care at one stroke is fraught with serious difficulties—it seems wise to inquire whether partial and experimental solutions may not profitably be considered.

The total problem could, theoretically, be split in one of three ways. They are not, of course, mutually exclusive and one or more of them might be combined.

One alternative would involve the limitation of insurance benefits to a specific economic level of the population. This is open to serious objections, since it involves something more or less analogous to the means test. Such a program—like the Maryland plan, which is, of course, not insurance at all—would however provide valuable actuarial and administrative experience.

A second alternative would be the limitation of the type of professional service to be rendered. Such a program might, for example, cover only hospital bills (perhaps by subsidizing Blue Cross plans or by covering, in addition, the medical costs of hospitalized illness). Again there would be many problems involved (in separating hospital and other services, in limiting excessive costs, and in providing the necessary medical services). Also, again, however, we should learn much from such an enterprise.

Finally, instead of setting income limits or service limits, a more general approach might be made with limitation of the geographical areas to be served. The federal government might provide grants-in-aid to states for the setting up of their own programs of medical care. As a basis for pioneering, experimentally, this procedure would have certain manifest advantages and disadvantages.

It is certain that any gradual approach will be fraught with difficulties; and that a simple comprehensive national program would be more logical. Yet perhaps the difficulties in a piecemeal approach would, in toto, be less than those encountered by an immediate, all-inclusive, national program.

The writer believes that it would be most unfortunate if the issue between immediate and comprehensive federal compulsory insurance on the one hand and maintenance of the status quo on the other were a central and major issue in the Presidential campaign of 1952. The formulation of such an issue might lead either to hasty and ill-advised action in 1953 or to a temporary stagnation, leading inevitably to such hasty and ill-considered action at a future date.

We have less than three years to work out a constructive policy in the field of medical care. Is it not possible that politics and polemics and paid propaganda may be laid aside and that the statesmanship of competent experts may establish a sound policy of directed gradualism leading to ultimate solution of this most urgent problem of mid-century public health?

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MOLECULES, CELLS AND ORGANISMS

ADVANCE in the physiological sciences during the past decade has been largely based on astounding developments of organic and physical chemistry. Without the solid body of fact and the theoretical insight provided by these basic sciences, this progress would have been impossible.

There is a wide gap, however, between such fundamental researches and the behavior of the living cell and the living organism. As Szent-Györgi[1] has said, "An enormous amount of work carried on by classical methods was repeated later with perfected physical methods. The results of such refinements failed to leave in their wake a deeper understanding than had been obtained before. The reason lies in the wholistic nature of approach. To the physiologist muscle and a muscle twitch are units which cannot be disintegrated."

The work of Szent-Györgi and his group, in the National Institutes of Health, and at the Marine Biological Laboratory in Woods Hole, have gone far to close the gap between our knowledge of molecules, as their behavior is revealed by molecular physics, and of muscle cells as they actually behave in the animal organism. Their researches provide fascinating reading, even for those of us who are laymen in the field.

A protein complex, "actomyosin" is the characteristic basis of the contractile structure of muscle. The actin fraction of this complex — in a relaxed muscle — exists in the form of very elongated molecules, associated end-to-end to form long fibers and the myosin molecules, also elongated fibers, attach themselves to the actin filaments. The agent active in muscle contraction is a nucleotide, "adenosine triphosphate," or A.T.P. which contains in its linkage a large source of free energy. When A.T.P. acts on acto-myosin, the elongated molecules of myosin lose their charge, dehydrate and change into a series of globular molecules. Thus, the contraction of the muscle as a whole is beautifully explained by the physico-chemical behavior of the individual molecules of which it is composed. "Muscular activity is the sum of the independent functions of these little units, the size and energy characteristics of which can be calculated with fair accuracy."

The organism is, however, more than an aggregation of cells; and the relation between its parts—in ontogeny, in particular—are very hard to conceive on purely chemical lines or on the basis of conventional neuro-muscular control. Here, too, recent studies have opened up attractive vistas of speculation. H. S. Burr, at Yale, has been working for some years on a "field theory in biology"[2] which may perhaps provide a key to such problems. In physics, the electromagnetic field "possesses a vector property which not only establishes the position of all charges within its range, but also gives direction to the movements of the charges. This field, then, has the attributes necessary to establish pattern or design in matter." Burr and his associates have developed techniques for measuring very slight differences in electromagnetic potential between various points in the living organism. They find that standing potential differences between such points actually exist and that they form regular and constant patterns. The right side of the body, for example, in 90 per cent of observations, is positive to the left side by several millivolts. Definite changes in potential occur in women at the time of menstruation. In animals, increases in potential are observed to be correlated with the growth process. In the frog's egg, the point at which the head of the embryo will appear can be identified in advance (even before fertilization) by a drop in potential. Various strains of corn exhibit highly characteristic differences in their normal potentials.

The relation of cause and effect in these phenomena has not been determined. What has been demonstrated is that the degree of activity of biological processes is correlated with characteristic and significant differences in electromagnetic potential. Whether potential differences operate in reverse direction, to influence biological processes, has not been shown. It would be highly desirable to experiment along such lines. In physics, the electromagnetic field is not an epiphenomenon but an essential and determinative part of the "pattern of the universe." If this should prove equally true in biology, further bridging of the gap between the cell and the organism might be in sight.

1. *Science*, 110:411 (Oct. 21), 1949.
2. *Scient. Monthly*, 64:217 (Mar.), 1947.

THE DONORA EPISODE

SINCE the days of water-borne epidemics of typhoid and cholera, few experiences in the field of environmental sanitation have been so dramatic as that which occurred in Donora, Pa., in the last week of October, 1948. An exhaustive and well printed report on this episode has recently been published by the U.S.P.H.S.[1]; and some of the field problems involved in the study were presented by Dr. J. G. Townsend at the New York meeting and will be published in a later issue of this JOURNAL.

Donora is a small steel mill town on a curve of the Monongahela River. Smogs have been common in this bowl between the hills; but, on the occasion in question, the atmospheric conditions were such as to make the accumulation of smoke and fog unusually severe and persistent. It began on Wednesday, and by Saturday the first death occurred. Before the atmosphere became clear again, 43 per cent of the 13,839 persons in the area were affected by an irritation of the respiratory tract, the predominant single symptom being cough. Fifteen per cent were mildly

affected, 17 per cent moderately and 10 per cent severely. Over 60 per cent of persons 65 years of age and older reported some affection, almost half being in the severely affected group. Although onset in some cases was as early as the first day of severe smog, 40 per cent occurred on day Number 2. By the end of day Number 3, 17 persons had died; 3 more died shortly thereafter bringing total deaths to 20.

The death rate was higher among non-whites than among whites, and higher in the village of Webster than in Donora itself. The average age of the victims was 65, the youngest being 52 and the oldest 84. Preëxisting disease of the cardio-respiratory system was a significant factor among the fatally ill. Some relationship appeared between severity of affection and housing quality. Domestic animals also became ill and some died. Mortality records showed that other crises have occurred in Donora, probably related to atmospheric conditions and creating occasionally high death rates.

Sulfur dioxide and its oxidation products, together with particulate matter appeared to be the significant air contaminants. Among the important contributors to the air pollution load with reference to sulfur dioxide were zinc plant sintering operations, blooming mill and steel mill boiler stacks, domestic heating systems, and local steam locomotives. Among the contributors of particulate matter were zinc spelters, zinc plant waste boiler stacks, open hearth furnace stacks, domestic heating systems, and local steam locomotives.

The report recommends the reduction of gaseous contaminants and particulate matter formerly discharged into the atmosphere and a program of weather forecasting to alert the community of impending adverse weather conditions so that adequate measures can be taken for protection.

Conditions obtaining at Donora were obviously exceptional—though by no means unique. The problem of widest interest to public health workers is whether—since an extremely heavy smog caused nearly 6,000 cases of disease in Donora, lesser exposure to similar smogs of less intensity may have an important—though less far-reaching—effect on human health. This is, of course, not *necessarily* the case. It is conceivable that there is a threshold of throat irritation below which no harmful effects are produced. Preliminary studies did not indicate exceptionally high death rates from respiratory and cardiac disease in Donora in the past, as compared with nearby communities.

It is, of course, well known that death rates from respiratory disease are high in low-income groups. Studies have shown that, in a given city, such rates are excessive in areas of intensive industrial atmospheric pollution. These are, of course, also the areas of low economic status. There is a definite challenge to the epidemiologist to attack this problem with the best available tools of research. Studies of seasonal variations of age-adjusted respiratory rates in communities with and without smog, in low-income areas without smog and high-income areas exposed to smog and the use of partial correlations where both factors are present in varying degree, should tell us whether Donora was an exceptional incident or a signpost.

1. U.S.P.H.S. Air Pollution in Donora, Pa. *Pub. Health Bull.* No. 306.

OFFICE MANAGEMENT

THE other fellow's profession often seems to be chiefly the application of common horse sense and ordinary human understanding; although each of us is aware how much more there is to his own particular corner of science. Actually, both common sense and technical knowledge are essential to successful solution of any practical problem. Every specialist in the public health field knows that, without training in the principles and practice of the methodologies involved in his particular profession, applied common sense can be a highly untrustworthy guide.

Most of us are laymen so far as office management is concerned. And as laymen, we are prone to assume that office management is "mostly applied common sense and ordinary human understanding." Believe it or not, office management is a specialty! A general accepted body of principles has been evolved. Agreements on methodology have been reached. Formal office management and personnel courses have been established in the business schools of universities. There is a National Office Management Association, dedicated, like our own A.P.H.A., to the improvement of a professional field.

The officers and boards of large corporations have learned the high cost—in cold cash—of hit-or-miss office management and "good intentioned" employee relations. They are creating management and personnel divisions staffed by trained, experienced practitioners in office management. They have found these services profitable.

The health officer may object; but our office is too small. We are too few to be helped by professional management specialists. We are all one family—"happy" or not; we know all about each other; we manage to get along well enough. Yet small staffs may suffer as much as large ones from unhappy personnel situations. Inefficiency in office management may be proportionately just as costly. Executives of small health agencies can frequently obtain informed guidance in their efforts to improve office and personnel policies from local or nearby universities, through surveys and expert advice. The U.S.P.H.S. is also in position to assist in the improvement of such policies.

Health administrators and agency executives accept the principle of periodic evaluation of their programs. They invite professionally equipped surveyors to examine their disease control practices and their health promotion activities. They accept informed criticism; they take pride in findings of accomplishment. But as for office management, it is just "common sense."

Our only purpose here is to urge the administrator to place office management and personnel relations in the same category as the other fields of agency activity; to open his office to the same sort of competent, disinterested, professional examination that his other services get; and to accept professional guidance in this field, as he has learned to accept it in the others. He, too, may find that it pays.

Credit Lines

MAKING THE FACTS DRAMATIC

The American Academy of Pediatrics Study of Child Health Services in Louisiana has been dramatized through *What We Are Doing for Our Children,* an attractive pictograph illustrated booklet published jointly by the Louisiana Study of Child Health Services and the Maternal and Child Health Section of the Louisiana State Department of Health. The main aspects of the Child Care Study are pictured for Louisiana in relation to the United States as a whole, as well as with the states having the best and worst records respectively for the various items studied. Louisianians cannot fail to see that they are near the bottom of the list in physicians, preventive medical services, dental and nursing services, hospitals, etc. However, except in one instance, namely, relating infant death rates to proportion of hospital births, no correlation is made between facilities and present state of child health in Louisiana. For example, might there not be a constitutional skeptic who would think it a matter for congratulation that only 11 per 1,000 Louisiana children are under medical care on an average day, whereas the United States average is 14 and in the highest ranking state, 23? The pamphlet includes a 7 point program for meeting the needs, the first of which is the organization of state and local child health councils. That too has food for the skeptic's thought. Are there now to be welfare councils, health councils, child health councils, school health councils, to say nothing of nursing councils, nutrition councils, dental health councils? Section of Maternal and Child Health, Louisiana State Department of Health, New Orleans 7.

WHERE TUBERCULOSIS HURTS MOST

Since dying is the inescapable experience of all mankind, it is becoming the habit of vital statisticians to look beneath the surface of mortality figures. They do not challenge the simple fact that cardiovascular diseases are the most frequent cause of death. Last year Dickinson of the American Medical Association, however, found accidents the most deadly in terms of years of life cut off. Now Godias Drolet of the New York Tuberculosis and Health Association analyzes 1948 mortality figures for that city and comes up with the conclusion that for men tuberculosis is the chief cause of death in terms of working years lost although it ranks fourth in absolute number of deaths. For women it ranks eighth as a cause of death, but second in terms of working years lost, yielding only to cancer deaths from which deaths were more than 8 times as numerous. The detailed report which also has some clues as to methodology is presumably available from the New York Tuberculosis and Health Association, 386 Fourth Avenue, New York 16.

ANOTHER MOVIE BIBLIOGRAPHY

Movies for Health Education is the title of the movie bibliography recently published by the West Virginia Health Department (Charleston) through its Bureau of Health Education. Listed are 120 films available from the bureau, classified into 9 subject groups. It is in a loose-leaf binder, mimeographed, and illustrated with the simple but effective line drawings that have become the hallmark of the West Virginia department's publications. Prepared for distribution in West Virginia but probably available to others with a special interest.

INDUSTRY PROVIDES COMMUNITY DOCTOR

The Calco Chemical Division of the American Cyanamid Company has a plant in Piney River, N. J., on the outskirts

of Bound Brook. This community had no resident physician and its population had until recently been traveling long distances for medical care. Nor is the company's need for industrial medical service sufficient to occupy the full time of a plant physician. Hence, the company has planned to meet both its own needs and those of the community immediately surrounding it by employing a physician and providing a special building for his offices and the medical services. The physician will spend several hours in the plant daily, being free to devote the rest of his time to private practice in the surrounding community. Erwin L. Hirsley, M.D., who was a commissioned officer with the U. S. Public Health Service assigned variously to Alabama, New Mexico, and North Carolina, has been selected to fill this post.

WHAT IT TAKES TO GET WELL

My Get-Well Trip in a bright red cover has been designed to make an adventure of the road back to recovery for the child who has had poliomyelitis. The emphasis is on the team work of patient, doctor, nurse, and physical and occupational therapists. Prepared by Constance B. Crail, Los Angeles Orthopedic Hospital, and delightfully illustrated by Munro Leaf as a gift to polio work. National Foundation for Infantile Paralysis, 120 Broadway, New York 5.

UN BULLETIN ON NARCOTICS

The Department of Social Affairs of the United Nations began publication in October, 1949, of a quarterly *Bulletin on Narcotics*. It will attempt to give the most recent news on controls, contain technical and scientific articles, articles on legislation and administration, as well as current information on the development of a single international narcotic convention to replace the 8 existing international instruments. This first issue is well printed on a high grade of paper and with good photography by the Columbia University Press, Morningside Heights, New York, from which it is available at 50 cents.

CHILDREN PLAN COMMUNITY HEALTH

Petersburg Builds a Health Program is the well told tale of a community project that has implications not only for community health facilities, but for community spirit, public health recruitment, and education. Petersburg is a county seat of some 2,000 persons on the banks of the Potomac in West Virginia. Its school population is made up about equally of village residents and those from outlying villages.

Through a three year grant by the W. K. Kellogg Foundation to the West Virginia Department of Education, the school children undertook to study the community's health conditions and resources, parcelling out various areas to the different grades—garbage and sewage disposal to the eighth grade, food handling to seventh, insect pests to the fifth grade, for example. The children by committee and other work visited the sewer outlets to the river, the source of the water supply, public parks, and rest rooms, the city dump, etc.

Now in its third year, the project has grown to involve adults as well, and planning is going on for rat and insect control, for correction of shortcomings and for building up school health, recreation facilities, etc. The children themselves made a playground park plan providing for a community building, swimming pool, game and apparatus areas, and a preschool area with sandboxes, wading pool, etc., and the adults liked the plan and are making it a reality.

Petersburg does not need to wait until medical school days for its boys and girls to be public health conscious. Nor will community organization be a new subject awaiting graduate school exploration.

The story of this project has been

written by Effie G. Bathurst of the Division of Elementary Education, U. S. Office of Education, for its New Enterprises in Education Series. Available from Office of Education, Federal Security Agency, Washington, D. C.

VISUAL AIDS IN TEACHING ABOUT POLIOMYELITIS

Anatomical drawings relating to infantile paralysis are now available to teachers of biology in high schools and colleges. These were executed by Dr. Frank H. Netter and originally appeared in the August 14, 1949, issue of *Life*. For the secondary school level, the drawings may be used to supplement a *Science Unit on Poliomyelitis,* comprising a source book for students, a teachers' guide, and a 39 frame filmstrip. Available without charge, from Education Service, National Foundation for Infantile Paralysis, 120 Broadway, New York 5.

EXCHANGING MEDICAL COLUMNS

In May, 1949, the Colorado State Health Department and the State Medical Society arranged for a regular exchange of material in their respective publications. Starting this the May *Colorado Health News* had an article, "Tick Time in the Rockies," prepared by the State Medical Society, and the *Rocky Mountain Medical Journal* one on "State Board of Health Regulations on Routine Prophylactic Treatment of Newborn's Eyes."

A NEW NAME AND A NEW DRESS

The Public Charities Association of Philadelphia has for a good many years had a monthly publication, the *PCA Herald*. Beginning in the fall of 1949 it has given up this publication and started a new one, a quarterly, *Currents In Pennsylvania's Health and Welfare*. The fall issue comes in an attractive green dress with high grade paper and printing and excellent picture and photograph illustrations. Including other items it has the eight recommendations for health for Pennsylvania as taken from the health survey made by the A.P.H.A.'s Committee on Administrative Practice. It also has an editorial on the survey, the gist of which is that the disease from which Pennsylvania's health and other social services suffers is faulty organization, and that the prescription for treating it is sound organization and competent personnel with "enlightened public opinion and support." *Currents* is 35 cents per copy, $1.00 per year. Public Charities Association of Philadelphia, 311 South Juniper St., Philadelphia 7.

WHERE TO FIND IT

The Vermont Tuberculosis Association has published *Health, Where To Find It,* which includes a catalogue of health materials classified by various subjects and a directory of health and welfare agencies in the state. This is a well done job to meet a real need for teachers and others for health education materials. One could wish, however, that included in such a catalogue were material on community organization for health, particularly with reference to the part of a local official health agency. Vermont Tuberculosis Association, 348 College St., Burlington, Vermont.

1949 HEALTH INSURANCE BILLS

The Research Council for Economic Security has summarized the cash sickness plans that were passed or introduced in the 1949 state legislative sessions. In 16 states 71 cash sickness bills were introduced of which 69 were defeated. The New York bill became law, the Washington bill passed both houses of the legislature and is subject to a referendum vote at the general election of 1950. Four states now have compulsory cash sickness programs: California, New Jersey, New York, and Rhode Island. *Publ. No. 74*, October, 1949, Research

Council for Economic Security, 111 West Jackson Blvd., Chicago 4.

ANNUAL REPORTS

Children's Fund of Michigan, 20th annual report is both a good description of 20 year's activities and a stocktaking in a special sense. In another 5 years the fund will have been used up, as planned by its benefactor, the late Senator James Couzens. And so both the philosophy and the accomplishments have a special significance they would not have were this a fund set up in perpetuity. 660 Frederick St., Detroit 2.

The biennial report of the Oklahoma State Health Department is an impressive document with some *Life Magazine* overtones. Excellent paper and typography, a multitude of photographs as well as charts and tables tell the story. It includes a map of proposed health districts as originally published in *Local Health Units for the Nation* alongside another map showing only 40 of the state's 77 counties currently served by full-time local health services.

WORTH ACQUIRING

Fun for the Family is the title of No. 9 in the Family Health Series Guide for Public Health Nurses, prepared by the Department of Educational Nursing, Community Service Society of New York. It is intended to help the visiting nurse in developing family fun as a means of building family comradeship and understanding. It is a series of "at play" photographs accompanied by an appropriate jingle. Community Service Society of New York, 105 E. 22nd St., New York 10, 25 cents; 100 or more copies, 20 cents.

That Extra Something is intended to whet the appetite of Citizen Jane and John for more information about what a local health department will do for him, his family, and his community and how to go about getting one. It hasn't a statistic nor a tabulation, but easy reading matter in short, snappy sentences and appealing little line drawing illustrations with emphasis on happy, healthy childhood.

That Extra Something was prepared by Yolande Lyon, public information director, National Health Council, under the direction of a special subcommittee on educational materials of the Council's National Advisory Committee on Local Health Units. This subcommittee, whose chairman is Mrs. Dwight S. Perrin, board member of the American Social Hygiene Association, undertook this project in response to an insistent demand by many voluntary health and citizen agencies for a simple introduction to the local health units program that might be distributed widely at small expense. More than 200,000 copies had been ordered within a month of its debut. It is being made available at cost by the National Health Council, 1790 Broadway, New York 19, $1.50 per 100 up to 1,000; $1.25 per 100, 1,000–10,000; $1 per 100, 10,000 or more.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Obesity—*By Edward H. Rynearson, and Clifford F. Gastineau. Springfield, Ill.: Thomas,* 1949. 134 pp. Price, $3.50.

This book is packed full of practical information for the doctor treating overweight persons. It contains, succinctly and well written, all the information necessary for the doctor to manage the obese patient. It provides the basis for motivation which is important in convincing the patient to make a start. It gives a method for predicting the loss of body weight that is both practical and useful to the physician and to his patient. When a patient on reducing regimen follows the prescribed diet, the predicted loss of weight and the observed loss of weight are remarkably similar. When the patient is following the predicted line, then both the patient and the doctor are satisfied. When he is not doing quite so well as the predicted line, it is obvious to both the patient and the doctor that some mistake is being made in selection of foods, or actual cheating is occurring, or water or fecal retention has occurred. If it is due to water or fecal retention, continuance on the same regime will be followed by a satisfactory return to the predicted line. On the other hand, if it is due to cheating or mistakes in diet, the line does not return to the predicted in the following week or two. The physician and patient then know that the diet is not being followed—either through cheating or through ignorance.

The book contains diets that are entirely practical and useful for the reducing patient. The reviewer feels, however, that the extremely low caloric diet, such as the 600 and 800 calory diets, should be accompanied by a few more precautions to the physician as to their use. When a doctor places the patient on a 600 calory diet, then not only the patient but many of the patient's friends, without benefit of medical supervision, also follow the same diet. It is very difficult to supply all the nutrients necessary, other than calories of course, in diets containing less than 1,000 calories.

The bibliography is excellent, selective and documents the opinions of the authors. The index is adequate. The typography and readability are excellent.

NORMAN JOLLIFFE

Fighting Spotted Fever in the Rockies—*By Esther Gaskins Price. Helena, Mont.: Naegele Printing Co.,* 1948. 248 pp. Price, $4.00.

Once more the fascinating story of the conquest of spotted fever is told, this time rather uniquely for three reasons: (1) It is written in popular language, easily understood by any reader but so well documented and so accurate as to be a valuable source book for the scientist, a remarkable feat for any author; (2) for the first time in popular style the indispensable work of the entomologists, particularly Cooley and Parker, is done full justice; (3) the sterling characters and interesting personalities of those who persisted in the battle despite many years of discouragement are brought out through repeated personal interviews and innumerable personal communications. Not always can accurate history be written while those who made that history are still available to personalize the writing. During her four years of research, Esther Gaskins Price obviously got to know and admire "Little Bull" Cogswell, now past 75, and the dynamic and peppery "Bob" Cooley, now past 70,

just as many of us have known and admired them over the years. The recent and untimely death of Dr. Parker indicates that this work was not undertaken one bit too soon.

The book has apparently had little promotion by its publishers. Good paper, type, and illustrations are slightly marred by poor printing.

We are indebted to this author for telling so much, so interestingly, and for distributing the credit so justly to the many who deserve it.

WILLIAM P. SHEPARD

The Work of the Sanitary Engineer. A Textbook on Water Supply, Sewage, and Sanitation of Buildings. (Based on the original work by the late Arthur J. Martin.)—*Rewritten and enlarged by L. B. Escritt and Sidney F. Rich. New York: Edward W. Sweetman,* 1949. 716 pp., 247 figures, 65 tables. Price, $12.50.

Contrary to one's expectation on reading the principal title of this volume and that of its predecessor, this book is not addressed to young men in search of a career or to laymen who wish to find out what sanitary engineering is about. The actual contents of the volume are revealed by the subtitle, and the purpose of the book, as explained by the authors, is to serve "civil engineers, sanitary engineers, architects, surveyors, sanitary and building inspectors, and students of sanitary science." Like its forerunner, this is a competent book on sanitary engineering practice and administration in Great Britain. Like its forerunner, too, it is well written, well printed, well illustrated, and well documented. To crowd so much of sanitary engineering into a single volume requires economy of treatment as well as economy of selection. A good balance seems to have been struck by the authors.

The book is divided into seven parts: Introductory (22 pp.); Law and Administration (59 pp.); Water Supply (123 pp.); Sanitation of Buildings (73 pp.); Sewerage and Land Drainage (165 pp.); Sewage Treatment and Disposal (188 pp.); and Public Cleansing (18 pp.). The broad coverage that is given to the constituent subjects is illustrated by the following: Included in the Introduction are chapters on the Sanitary Engineering Profession and the Work of the Sanitary Engineer; in the part on Law and Administration, a chapter on Sanitary Authorities and Enactments is followed by chapters on the legal aspects of sewerage, plumbing, and water supply; the Sanitation of Buildings deals with public conveniences as well as with plumbing systems; the section on Land Drainage is concerned with the underdrainage of building sites, agricultural lands, playing fields and aerodromes; there is a chapter on Trade Wastes in the part on Sewage Treatment and Disposal, and the part on Public Cleansing consists of chapters on Refuse Disposal and on Disinfestation and Disinfection. Three appendices deal with sheep ponds or dew ponds (1 p.), the divining rod (2 pp.), and drainage of groups of buildings (6 pp.). A bibliography of 296 titles and an index close the volume.

GORDON M. FAIR

Conference Techniques, Section II of Hospital Personnel Administration. *Chicago: American Hospital Association,* 1949. 141 pp. Price, $1.50 to members, $2.50 to non-members.

Few health agencies have produced so forthright and expert a tool to harness the forces of democracy in everyday administration. Here is a practical, detailed manual of "how" to have successful conferences and how to reach sound decisions which will find acceptance and result in action among the staff. It is written in terms of and in the language of the day to day problems in any hospital.

Basic teaching methods are briefly discussed, and the place of the conference

method is clearly outlined. It is emphasized that the techniques are a form of training. It provides a "guide for securing coöperation and participation." The values and weaknesses of the conference and other teaching methods are well presented.

Chapter headings are in terms of such practical problems as planning and conducting the conference, how to deal with the special problems of aggressive, silent or belligerent members, closing and evaluating the conference.

The necessity for training is repeatedly stressed. The statement is made that "there are few good supervisors who can not learn to be good conference leaders." A training program for leaders is outlined. The volume points out the resources available to almost every area for professional assistance in this problem. In spite of the emphasis given to training, it is not overemphasized, in fact a possible weakness of the volume may be that its apparent simplicity may lead to premature efforts without the period of professional orientation and conference leader training.

Experiences cited remind us how difficult it is to practise genuine democracy. Problem solving by analysis and solution rather than compromise can be brought many steps nearer by the application of this volume. It is a most important service in a field where systems of hierarchy have long prevailed. Many staffs of professional workers in fields not immediately related to hospitals will find this volume useful. ROSCOE P. KANDLE

These Are Your Children — *By Gladys Gardner Jenkins, Helen Shacter, and William W. Bauer. Chicago: Scott, Foresman,* 1949. 192 pp. 200 illus. Price, $3.50.

This is a book that should interest all who are concerned with the care and development of children. Especially designed for parents and teachers, it is written in simple language, with a helpful, commonsense approach to child training, care, and development.

The book is profusely illustrated by carefully selected photographs and illuminated by case histories of children, arranged in sequence of age groups and related to the physical, mental, or emotional development problems peculiar to each age group.

Authoritative information from our best research centers, reinforced by the practical experience of the authors, is cited to focus attention on the why's and wherefore's for deviations from the normal physical, mental, and emotional adjustments for boys and girls in their respective age patterns of development.

With such knowledge, the authors are qualified to discuss what should be done for the maladjusted child. And by the same token, why the development needs of the child should be carefully observed and studied during the several growth patterns, so that normal development may continue unimpaired.

Of special interest are the chapters on the Mature Child, The Preadolescents, Looking towards adolescence, Living with your children, and A plan for action.

Its easy running phrases and stimulating optimism makes the reading of this current piece of child literature a delightful and informative pleasure.

The volume is unreservedly commended to parents, teachers, and workers in child guidance and child health.

SAMUEL JAY CRUMBINE

Present Concepts of Rehabilitation in the Tuberculous—*By Norvin C. Kiefer. New York: National Tuberculosis Association,* 1948. 354 pp. Price, $3.50.

This book is a most comprehensive review of the literature on rehabilitation, especially as it applies to the tuberculous. Such a project has been needed for some time. Rehabilitation of the physically handicapped is a comparative

newcomer to the field of medicine. The knowledge of the average physician on this subject leaves much to be desired.

As in most new fields much confusion has existed as to purposes, definitions, and methods. The author has done much to clarify the entire situation by carefully and briefly summarizing the material which he has reviewed in the first fifteen chapters and then devoting the last chapter to his own comments and opinions.

The main theme stresses the idea that rehabilitation is an all-inclusive term which applies to the "restoration of the tuberculous to the fullest physical, mental, social, vocational, and economic usefulness of which they are capable." Today the average physician thinks of rehabilitation as job training or vocational rehabilitation. The point is made that progress in the field will be slow until the broad concept of rehabilitation is well understood.

The number of comprehensive inpatient rehabilitation programs for the tuberculous is small. However, there has been a very gratifying increase in the number of tuberculous patients rehabilitated annually. Furthermore, the history of rehabilitation shows a gradual but ever-increasing development of programs and an increasing realization of the value of giving the patient something more than medical care.

This book deserves a place in the medical library of every physician with a special interest in tuberculosis or in the general field of public health.

J. B. STOCKLEN

Some Provisions in the Statutes of the States Relating to Public Health and Sanitation, Including Plumbing; and, Regulations of House Trailers and Their Locations, and Plumbing in House Trailers, Trailer Parks or Buildings—*Compiled by L. D. McPherson. Washington, D. C.* (712 Bond Building).

Reference is given to local and state laws and ordinances and nationally recognized codes dealing with different aspects of sanitation, plumbing, and trailer regulations. The first of these multilithed, paper bound volumes, tabulates, by a phrase, different typical methods of health department organization, degrees of responsibilities for control of sanitation, and general content of ordinances or laws. Each item is given a reference number. A table is presented in which is indicated those states in which each item applies.

The second volume quotes from ordinances, laws, or nationally recognized codes, important portions relating to the regulations of trailers or plumbing. The specific chapter, section, and paragraph of the code or law is given. References are made to other cities or national codes having equivalent statements.

Obviously, a tabulation based on the situation in the entire United States would be a stupendous task. However, a good representative survey has been made. The first volume contains over 300 provisions common to most of the 48 states; the second is based on records of 126 legal jurisdictions and the codes of at least 13 national organizations. The material should prove valuable to anyone writing ordinances on the subjects considered. FRANCIS B. ELDER

Diagnostic Tests for Infants and Children—*By H. Behrendt. New York: Interscience Publishers,* 1949. 529 pp. Price, $7.50.

As the title indicates, this book deals entirely with diagnostic tests employed in the pediatric age group. The majority of these procedures are of a biochemical nature and present a rather formidable and uncritical array of functional and diagnostic tests together with descriptions of methods for the chemical determinations involved. The methods presented are well known pro-

cedures, many of which would be practical only for a skilled chemist in a fully equipped laboratory. Some of the more elaborate functional tests require a nicely synchronized coöperation on the part of the patient and nursing staff, which seems utopian rather than realistic to anyone who has struggled with so simple a problem as obtaining 24 hour urine specimens from patients of pediatric age. Nevertheless, the organization of the material is good and each of the chapters is accompanied by an excellent selection of standard references. Much of the material would be of little use to the practising pediatrician; however, this should not detract from its value as a very good reference book and laboratory manual.

AMOS CHRISTIE

Prenatal Care—*U. S. Children's Bureau Publication No. 4. Completely Rewritten. Foreword by Katherine F. Lenroot. Text by Ann DeHuff Peters. Washington: Government Printing Office*, 1949. 70 pp. Price, 15 cents.

The U. S. Children's Bureau has pioneered in the publication of pamphlets on prenatal care since one year after its establishment. Its early publications were clearly and concisely written and were in great demand throughout many reprintings. Although limited largely to advice on medical care during pregnancy, *Prenatal Care* filled an important initial function. Experience proved, however, that information regarding medical care alone had very little effect in the reduction of maternal mortality. Not until it was fully recognized that expectant mothers themselves needed to be instructed in language they could understand did any substantial improvement take place. The widespread popular demand for such instruction ushered in a new era of prenatal care. Detailed studies of the causes and prevention of maternal mortality by the U. S. Children's Bureau and local groups of physicians began to show results in the reduction of maternal mortality rates which have continued to decline year by year ever since 1930.

Classes for expectant mothers and fathers helped to create a demand for popular, clear-cut and well illustrated literature. This pamphlet from the Children's Bureau brings together the latest, authentic trustworthy information on maternal and "newborn baby" care. It is written in a personal conversational style which will appeal to intelligent mothers and fathers everywhere. Factual material is presented in easily understandable language. Where there is a difference of professional opinion on controversial matters, both sides are clearly stated and the mother is advised to consult her own physician. An important section of the pamphlet is the common-sense consideration of "Thoughts and Feelings." The format of this publication is a great improvement over former government publications. Its two column pages, attractive line drawings, appendix and glossary with complete index make it attractive and helpful. It can be highly recommended and should secure widespread acceptance.

RICHARD A. BOLT

Social Biology and Welfare—*By Sybil Neville-Rolfe. New York: Macmillan,* 1949. 416 pp. Price, $4.50.

There is much of the autobiographical in this volume. To be authentic it could not be otherwise, since the author's life is so closely linked with British social welfare and public health progress over the past thirty-five years. Contacts with her zestful and indomitable personality also have made their impressions not merely in the Empire but throughout the whole world. She is a born crusader but not a fanatical one.

When, as a girl in her late teens, she decided to do something about prostitution, illegitimacy, and venereal disease, those subjects were even more taboo in

England than they were here. Of her first experience training as a "rescue worker" in a "Shelter for Fallen Girls" she writes, "No member of the staff had any knowledge of physiology or of the mechanism of mating and reproduction. A set of emotionally unbalanced girls, mostly in their teens, were steeped in an emotional religious atmosphere of confessions and constant chapel services. To prevent the exchange of 'unfortunate' experiences, they were forbidden to talk to each other. They were not trained for any gainful occupation." When informed that after two years in the home a girl could get a post as a general servant at $120 a year, the fledgling worker asked, "How much can they make at prostitution?" For that she was exiled to an outside job!

As Secretary General of the British Social Hygiene Council, Mrs. Neville-Rolfe persuaded and coerced leading physicians, biologists and sociologists to join her in the fray. Her book enlists their views and philosophies along with her own. In the main the volume outlines and deals with sex problems largely as they are handled by authoritative writers over here. Welfare and public health workers, sociologists and biologists—in fact anyone interested in human betterment and social progress—will find this book provocative, interesting and useful. So, likewise, is the widely-honored lady responsible for its existence. RAY H. EVERETT

Building Sound Public Relations—*By Edith Wensley. New York: National Organization for Public Health Nursing,* 1949. 96 pp. Price, $1.25.

This is a valuable step-by-step presentation of accepted methods for building a good community public relations program. Written primarily as a guide for public health nursing services, it is, nevertheless, applicable in its principles to many nonprofit organizations.

Very early in her book the author emphasizes a point so often ignored in such discussions: that all agencies in the health field have public relations, whether they want them or not. The only choice is between good, bad, and indifferent public relations.

"Good will and real understanding have to be won—and then carefully maintained," Mrs. Wensley quite properly insists. But to put a program into practice takes time, thought, and effort. The stakes are great: better public understanding of the service; easier staff work; improved recruitment; and mounting public support for adequate budgets.

There are two weaknesses in the book which should be mentioned: (1) In spite of an emphasis on the point that a public relations program requires sound and careful planning, the section on planning is relatively inadequate; (2) the fact that "interpretation and public information are a legitimate and necessary part of giving service" might well be more fully discussed.

Far overbalancing these flaws, however, are the positive values. On this side, the most important service rendered by the author is to analyze the ten different "publics" with which the nursing agency has relations, and to describe clearly the various measures which should be taken with respect to each of them. This part of the pamphlet particularly deserves wide study and comprehension. And the fourth chapter, dealing with tools and channels, should prove of much help in the difficult process of implementation.

The National Organization for Public Health Nursing is to be congratulated upon issuing this practical analysis and guide. RAYMOND RICH

Emergency Health and Sanitation Activities of the Public Health Service During World War II (Public Health Bulletin No. 302)—*By Joseph W. Mountin, and Edward B. Kovar.*

Washington: Govt. Ptg. Office, 1949. 96 pp. Price, $.25.

This bulletin—of interest both to public health workers and to lay people—outlines in very readable language the emergency measures carried on through state and local health departments in areas of critical importance to the national war effort. It describes the initial planning and surveying of the health and sanitation needs throughout the country which were begun in September, 1939, following the declaration of a state of limited emergency by President Roosevelt. Following this is a brief description of each of the major programs and activities of the U. S. Public Health Service from administration through venereal diseases. It is an impressive account of a job well done.

ROBERT E. ROTHERMEL

Industrial Toxicology — *By Lawrence T. Fairhall. Baltimore: Williams & Wilkins,* 1949. 483 pp. Price, $6.00.

This excellent reference book might have been properly titled "A Compendium of Industrial Toxicology." It consists of a series of one to three page summaries of the toxicology of some 70 inorganic and 130 organic elements or compounds. Each material is discussed as to characteristics, industrial uses, toxicity, and analysis.

In summarizing briefly, and appending pertinent references (conveniently placed with each substance discussed), the author has made readily available much valuable information concerning many substances not previously included in industrial toxicology texts.

This book will be of great value to the experienced industrial hygienist and toxicologist, but by its concise treatment may mislead the novice in the field. The admitted disparity in treatment of subjects, with the greater relative emphasis on the newer materials, may confuse the casual reader. For example, carbon tetrachloride with its great industrial importance and recurring instances of fatal intoxications, is covered in three pages, while columbium and palladium get respectively 1½ and 2 pages.

The arrangement of material alphabetically and an excellent index contribute to the value as a quick reference book. The subject matter is, in general, well chosen. The difficulty resulting from the admixture of clinical and animal experimental data without adequate interpretation of the latter, a failing common to the majority of the texts in this field, is possibly exaggerated by the concise character of this book. Similarly the quoting of the maximum allowable concentration values without qualification may lead to misinterpretation by the less experienced individuals. These defects, however, are minor compared with the value of a pertinent and timely presentation of so many substances of industrial toxicological interest. It is recommended highly for the reference shelf.

JAMES H. STERNER

Phenol and Its Derivatives: The Relation Between Their Chemical Constitution and Their Effect on the Organism—*By W. F. Oettingen. Washington: Nat. Inst. Health Bull. No. 190, Federal Security Agency,* 1949. 408 pp. Price, $.70.

A very complete review of phenol and its derivatives with an extensive bibliography. A review of available data on germicidal and toxicity properties is presented. Chemical and physical properties are also included. The bulletin describes the following groups: monophenols, diphenols, triphenols, halogenated phenols, aminophenols, nitrophenols, phenolic aldehydes, phenolic acids, and the phenolic ethers. The bulletin is an excellent source reference on the phenols.

W. L. MALLMANN

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Flexibility Is Urged Here—It is clear that, during their most vulnerable months, infants are not being protected against whooping cough by the present-day immunizing schedules. Judgment is needed in making changes, these writers warn. If likelihood of exposure is great, protection may be attempted soon after birth. Where it is unlikely, whooping cough immunization may wait its place in the schedule.

FOX, M. J., AND SNARTENO, R. Prophylaxis of Whooping Cough. *Am. J. Dis. Child.* 78, 5:677 (Nov.), 1949.

Anent Making Haste Slowly—If you are given to becoming impatient with the mental hygienists, thinking them over-cautious and over-conservative in matters of "preventive education" then it won't hurt you a bit to read this. The title tells what it's about.

FRANKL, G. The Dilemma of Psychiatry Today. *Ment. Hyg.* 33, 4:551 (Oct.), 1949.

Jargon Can Get You, Too—Do you find it hard to rid yourself of scientific jargon in explaining your work-a-day affairs? Then you'll be a changed man if you will read a paper that uses the words, heliocentric, amplitudes, anticyclonic, meridinial, solar ionospheres, oscillating discharges, diastrophic, magnetrons, varve cycle, and electromagnetic rotation just to presage a dry fall and winter. Thank goodness, we in New England have the Old Farmers Almanac to fall back on.

GILLETTE, H. P. Four Series of Weather Cycles. *Water & Sew. Works* 96, 9:363 (Sept.), 1949.

Good News—Mumps virus is successfully cultivated in the hen egg and an inactivated vaccine can be made from it. Reported here are the results—not yet published in detail—of a study revealing that the frequency of mumps among controls was three times that among the vaccinated. After the first 3 weeks, the infections that did occur among the vaccinated were much modified.

GORDON, J. E., AND KILLIAM, L. Ten Years in the Epidemiology of Mumps. *Am. J. M. Sc.* 218, 3:338 (Oct.), 1949.

"Come and Get It!"—As soon as you finish this bibliography I hope you'll send out for the issue of *Mental Hygiene* and will read the paper mentioned below. I won't spoil it by telling you what it's all about. If you are a warm blooded human, not merely a hygiene working automaton, you'll bless me for tooting this dinner call for the treat-of-the-month.

GREGG, A. A Contribution Toward the Study of Character Building in Children. *Ment. Hyg.* 33, 4:529 (Oct.), 1949.

Cold Facts—Epidemiologic evidence is presented which suggests that virus pneumonia may be related to other respiratory infections, and that it has a high degree of contagiousness in the family. Average incubation period 12 days: range 5–19.

JORDAN, W. S. The Infectiousness and Incubation Period of Primary Atypical Pneumonia. *Am. J. Hyg.* 50, 3:315 (Nov.), 1949.

What Every Dentist Should Know—You may have a fair idea about the national program for demonstrating the efficacy of topical applications of fluoride but it will still be worth your while to review this clear statement of

the work of the U.S.P.H.S. units and why they do the demonstrating the way they do it.

KNUTSON, J. W. The Nation-wide Tropical Fluoride Demonstration Program. *J. Am. Dent. A.* 39, 4:438 (Oct.), 1949.

Always Another Angle—Among high school seniors 39 per cent were found to be Schick-positive. Of those who had a booster dose 18 per cent were unprotected. Something is needed, say the writers, to take the place of the assumed subclinical infections that used to keep immunity at a safe level.

LANE, E. A., AND HOLLA, W. A. Diphtheria Immunity in High School Seniors. *New York State J. Med.* 49, 21:2548 (Nov. 1), 1949.

Some 8,000 Souls Poured In—If you are tempted to promote one, or are invited to take part in someone else's community health fair, you will profit by reading this eye-witness account of what went on in Portland when the health agencies of the town put on their second annual venture in organized pandemonium.

NELSON, H. Portland Puts It Over. *Pub. Health Nurs.* 41, 11:598 (Nov.), 1949.

From Demonology to Prefrontal Leucotomy—Do the projects you write about, or talk about, or just think about impinge ever so little on the realms of mental health? Then be sure you know where you stand in relation to the psychiatric pendulum that swings from physical to mental (even "moral") factors in causation and treatment, and then swings back again. This historical paper may help you dodge it.

OVERHOLSER, W. An Historical Sketch of Psychiatry. *Clin. Psychopathology* 10, 2:1 (Nov.), 1949.

Valedictory—His retirement as editor of one of the few avenues of the medical press open to two-way traffic (in matters of medical economics), gives this teacher a fine chance to saunter from side to side of the street, stepping on all the toes that impede his path.

PARK, E. A. A Communication from—*Pediatrics* 4, 5:689 (Nov.), 1949.

Epidemiologic Freak—In your collection of bizarre health happenings you will want to include this winter-time polio epidemic among Eskimos living close to the Arctic Circle. The attack rates, case fatality rates, and mortality rates were all wickedly high.

PEART, A. F. W. An Outbreak of Poliomyelitis in Canadian Eskimos in Winter Time. *Canad. J. Pub. Health* 40, 10:405 (Oct.), 1949.

Not Birth Weight Alone—Premies born of mothers suffering from disease or having obstetric complications have a mortality rate 4 or 5 times that of the premature babies born of healthy mothers. This finding lays added responsibilities at the obstetrician's doorstep.

TAYLOR, E. S., *et al.* Effect of Obstetric Difficulties and Maternal Disease on Premature Infant Mortality. *J.A.M.A.* 141, 13:904 (Nov. 26), 1949.

What the Country Needs—Pasteurizing milk in the home is still far from a fool-proof process satisfactory to milk drinker and sanitarian alike, but, as with the "good five cent cigar," we're keeping everlastingly at it to fill the need.

THOMAS, R. C. Operation Studies of Home Milk Pasteurizers. *Pub. Health Rep.* 64, 45: 1411 (Nov. 11), 1949.

Public Health in Foreign Periodicals

GEORGE ROSEN, M.D., PH.D.

THIS is the second of two columns devoted to Latin America. The first dealt with Brazil; this will consider other countries of that area.

VENEZUELA

Infestation with *Schistosoma mansoni* occurs in Venezuela, and Jaffé describes the pathological anatomy and pathogenesis of the condition.[1] In Venezuela, the liver and the heart are the organs in which lesions are found most frequently. Jaffé also points out that the intestinal lesions found differ from those described in other countries. Severe and extensive lesions are observed only rarely. The usual findings are catarrhal colitis with edema and small hemorrhages.

Malaria is an important problem in Venezuela. One of the principal vectors is *A. albimanus*, and Cova Garcia discusses its geographical distribution as well as its ecology.[2] This species occurs almost exclusively on the sea coast and in the lowlands around Lake Maracaibo and Lake Valencia. It is rarely found in other parts of Venezuela. The chief breeding places are reported to be ponds, overflowing rain pools, and faulty irrigation ditches. The larvae of *albimanus* were not found in water with a temperature above 32.7° C. or below 23° C., and very rarely where there was complete shade. The range of flight of this mosquito was found to be two kilometers, and the author reports that at night *A. albimanus* seeks out its victims without regard to darkness or light.

An overall view of the antimalaria campaign in Venezuela is provided by Gabaldon.[3] In July, 1936, there was set up, within the Ministry of Health and Social Assistance, a Division of Malariology. This unit has led the campaign to control malaria. More than 100,000 children in the lowlands have been examined to determine the precise distribution of the disease, and innumerable mosquitoes and their larvae have been identified in order to establish the geographical distribution of the vectors. The means employed in controlling malaria include the free distribution of antimalarial drugs, drainage, DDT spraying, and education.

Pool reports on the results of a large-scale campaign undertaken in Caripito by the Venezuelan authorities and the Creole Petroleum Corporation.[4] The employment of DDT spraying produced striking results in the reduction of insects and malaria. Pool points out, however, that on no account must the environmental measures developed over many years be abandoned as no longer necessary. Continued and unrelaxed prosecution of the antimalaria program, including its educational aspects, is necessary for a successful outcome.

In 1908 *bubonic plague* was introduced from Trinidad into Venezuela through the port of La Guaira.[5] The disease disappeared from the urban centers in 1919. Riaz describes the continuing existence of *sylvatic plague* from 1928 to the present in the Guaicaipuro and Ricaurte districts in the states of Miranda and Aragua respectively. This is followed by a discussion of the rodents and the arthropods that maintain the disease reservoir.

Pinto and Arenas[6] survey the literature on *sprue* in Venezuela, and conclude that the existence of the disease there is definitely established.

An interesting study of *salmonella* in-

fections in Venezuela is offered by Briceño Iragorry.[7]

Outbreaks of *epidemic conjunctivitis* in Western Venezuela are described by Risquez-Iribarren, Moreno and Anduze.[8] While the etiological factor has not been established, there is evidence to indicate the significance of bacteria of the genus Hemophilus. As possible vectors for Venezuela eight new species of the family Chloropidae are mentioned. In some localities the cases presented a clinical appearance similar to the epidemic keratoconjunctivitis described in other countries. The authors review the literature and refer to a similar conjunctivitis reported in the United States (Coachella Valley, California).

The epidemiology of *tuberculosis* in Venezuela is presented in an extensive monograph based upon examination of over 300,000 persons.[9] These studies were carried on in urban areas, rural areas, semirural zones, among the workers in the oil fields, and among the Indians. The Mantoux test was employed to establish infection with the tubercle bacillus, and morbidity was studied by means of miniature radiography. In Caracas 100,595 adults and 37,676 children were examined. Of the adults, 1,505 were found to have lesions (64.1 per cent in a minimal state, 29.1 per cent moderately advanced and 6.8 per cent far advanced). In a total of 19,628 contacts examined (comprising persons of all ages and from different urban centers), 8.76 per cent were found to have active lesions. This monograph is replete with interesting detailed information, and deserves close attention.

Finally, reference must be made to the Venezuelan interest in *child health*. Evidence of this interest may be seen in the journal *Infancia y Adolescencia* which the National Ministry of Education has just begun to publish.[10] Among the topics in the March-April issue are disturbances of speech in children, juvenile delinquency, socio-economic aspects of kindergartens, and others.

URUGUAY

Hydatid disease or echinococciasis is a problem of considerable importance in certain countries of South America, notably Argentina, Paraguay, and Uruguay. The situation in Uruguay is described by Jackson.[11] During the decade, 1935–1944, a total of 3,780 persons, or about 400 annually, were hospitalized with hydatid disease. This disease is prevalent in sheep raising countries where man is closely associated with heavily infested sheep dogs. In Uruguay the sheep is the most important disease reservoir, and sheep play the most important role in the transmission of the disease. This is due to the fact that sheep are most commonly eaten in rural areas on ranches, and the viscera fed raw to dogs.

Bovine tuberculosis is also of high interest in Uruguay. Castelo[12] reports on this problem and points out that from 1942 to 1947, of 53,908 animals tested 11.56 per cent were positive to tuberculin. He analyzes the figures in detail and shows that the situation has not improved during the period 1934–1947.

PERU

Montoya describes the evolution of the *antimalaria campaign* in Peru from the beginning of the century to our own day.[13] After mentioning the various measures that have been taken by the government since 1902, he proceeds to describe in detail the engineering activities of the Servicio Nacional Antimalárico during the past seven years. Montoya concludes that the antimalaria campaign has given satisfactory results. During this period, splenic and parasite indices have declined. Factors that have been important in the presence of malaria have been eliminated by means of sanitary engineering. An important addition has been the use of DDT. Health edu-

cation is an equally important factor in controlling malaria.

A very instructive report on *school health* in Peru is presented by Valiente.[14] Based on the records of 9,000 children, he describes the organization of school health service and then gives the results of a study undertaken in 1945. Valiente shows that the school health service is insufficient to meet the need in Peru. In and around Lima the relevant school population numbers more than 60,000 children. In 1947, the school medical service in that area examined 17,724 children. For the entire country the elementary school population numbers 800,000 children. In all of Peru there are only 42 school physicians. Pointing out these inadequacies, Valiente also shows how these may be alleviated.

ARGENTINA

The problem of *hydatid disease* in Argentina has been mentioned above. Crivellari and Cabella describe the plan developed for controlling the disease.[15] To deal with the problem a series of dispensaries have been set up in various parts of the country. A number of mobile units are attached to these establishments. Each of these units has assigned to it a physician, a veterinary, a health assistant and a driver, and is under the supervision of a medical or veterinary inspector. The duties of this personnel is to carry on an educational campaign, to collect statistics on human and animal infestation, and to work with local authorities in their efforts to combat hydatidosis.

Serres discusses the three stages through which the campaign for the control of hydatidosis has passed.[16] In his article he gives particular attention to the various laws that have been passed since 1908. In 1946, the Argentine League to Combat Hydatidosis was organized in Buenos Aires to assist in the control campaign and to collect further data on the subject.[17]

For those who wish to study the Spanish literature on hydatidosis, López-Neyra has compiled a bibliography.[18]

Romaña and Abalos report on the use of the insecticide *Gammexane* for control of *Triatominae*.[19] They believe that adequate treatment gives protection against reinfestation with *Triatoma infestans* for about 6 months. The walls and roof should be treated, also furniture and household goods.

The *venereal disease* problem in the state of Santa Fé is described by Moroder and Monella.[20] The rate for the city of Santa Fé is 650 per 100,000, 580 for the city of Rosario, 170 for the rest of the state, and 330 for the state as a whole, both cities included.

An Argentine publication of interest to medical entomologists is the checklist of American *Reduviidae* issued by Wygodzinsky.[21] This list gives the names of the existing genera and species, together with their primary synonyms.

Another pamphlet by J. W. Abalos describes the common poisonous animals of Argentina.[22]

According to a brief note by Tau,[23] cancer control in the state of Buenos Aires is based on a group of 3 diagnostic centers. The patients are subjected to various types of examinations. Argentine physicians are urged to send their patients without delay to these centers.

CUBA

The geographic distribution and epidemiology of *leprosy* in Cuba are discussed by Prendes and Pérez.[24] This paper had been read before the International Congress on Leprosy that met in April, 1948, in Havana. (Parenthetically, it should be noted that anyone at all interested in the problems of leprosy cannot afford to overlook the transactions of the Congress which have recently been published.[25] There are various papers dealing with leprosy in countries of the Western Hemisphere.) Prendes and Pérez point out that cus-

toms, hygienic practices, and living standards exercise a considerable influence on the incidence of leprosy; and they note that the majority of the patients belong to those social groups whose living standards are the lowest.

HAITI

Finally, I should like to call attention to a brief article on smallpox in Haiti.[26] This is an interesting contribution to historical pathology.

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10. *Infancia y Adolescencia*, Mar.-Apr., 1949.
11. H. Jackson Davis. Hydatid disease or echinococciasis caused by Echinococcus granulosus: with special reference to Uruguay, *Archivos Internacionales de la Hidatidosis* 7:219–230, 1947 (1948).
12. M. Castelo. Informe sobre tuberculosis bovina en el Uruguay, *Hoja Tisiologica* 9:1–22, 1949.
13. Jorge Madueño Montoya. El Ingeniero y su Intervencion en el Control de la Malaria en el Pais, Reprint from *Boletin de la Escuela Nacional de Ingenieros*, vol. 22, Jan.-Feb.-Mar., 1949.
14. Gonzalo M. Valiente. Contribución de la Sanidad Escolar al Estudio de los Problemas Médico-Pedagógicos del Niño Peruano. Observaciones sobre 9,000 Fichas, *Revista Peruana de Pediatria* Number 17, Oct.-Nov. 1948, Jan.-Mar., 1949, pp. 61–76.
15. Carlos A. Crivellari and Mario P Cabella. Plan de lucha contra la hidatidosis en la República Argentina, *Archivos Internacionales de la Hidatidosis* 7:125–130, 1947 (1948).
16. José R. Serres. Profilaxis de la Hidatidosis Equinococosica y su legislación, en la Republica Argentina, *Archivos Internacionales de la Hidatidosis* 6: 163–205, 1946.
17. José M. Jorge. Liga Argentina contra la Hidatidosis, *Archivos Internacionales de la Hidatidosis* 6:8–10, 1946.
18. Carlos Rodriguez López-Neyra. Bibliografia Equinococosica Iberica, *Archivos Internacionales de la Hidatidosis* 7:131–174, 1947 (1948).
19. C. Romaña and J. W. Abalos. Accion del "Gammexane" sobre los Triatomideos. "Control" domiciliario, *Anales del Instituto de Medicina Regional* 2:95–106, 1948.
20. Juan Moroder and Enrique Monella. La Importancia del Problema Venereo en la Provincia de Santa Fe, *Anales de Medicina Publica* 1:27–37, 1949.
21. Petr Wygodzinsky. *Elenco Sistematico de los Reduviiformes Americanos*, Tucuman, Republica Argentina, 1949.
22. J. W. Abalos. *Cuales son los Animales Venenosos de la Argentina?* 1949.
23. Ramon Tau. La Organización de la Lucha contra el Cáncer en la Provincia de Buenos Aires, *Revista de Sanidad* 1:91–92, 1947–1948.
24. Miguel A. González Prendes and Ramon Ybarra Pérez. Distribución Geográfica y Epidemiológica de la Lepra en Cuba, *Revista de Sifilografia, Leprologia y Dermatologia* 6:7–42, 1949.
25. *Memoria del V Congreso Internacional de la Lepra Celebrado en La Habana, Cuba del 3 al 11 de Abril de 1948*, La Habana, Cuba, Editorial Cenit, 1949.
26. Rulx Leon. La petite vérole en Haiti, *Bulletin Médical du Service de la Santé Publique*, Port-au-Prince, Haiti, 1948, pp. 53–60.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ANALYTICAL CHEMISTRY OF INDUSTRIAL POISONS, HAZARDS, AND SOLVENTS. Morris B. Jacobs. (2nd ed. rev.) New York: Interscience, 1949. 788 pp. Price, $12.00.

AUDIOLOGY. Norton Canfield. Springfield, Ill.: Thomas, 1949. 45 pp. Price, $1.75.

AUDIOMETRY, PUBLIC SCHOOL. PRINCIPLES AND METHODS. Loraine Anson Dahl. Danville. Ill.: Interstate, 1949. 286 pp. Price, $3.00.

BETTER CARE IN MENTAL HOSPITALS. Proceedings of the First Mental Hospital Institute of the American Psychiatric Asso. April 11–15, 1949. Daniel Blain, Editor. Washington: American Psychiatric Asso., 1949. 208 pp. Price, $3.00.

CHECK LIST ON HOW CITIES CAN CUT COSTS.

Practical Suggestions for Constructive Economy in Local Government. Chicago: International City Managers' Association, 1949. 52 pp. Price, $1.00.

COMMISSION ON CHRONIC ILLNESS. Proceedings of First Meeting May 20, 1949. Chicago: Commission on Chronic Illness. 73 pp. Price, $.20.

COMPOSITION OF FLORIDA-GROWN VEGETABLES. Byron E. Janes. Jacksonville, Fla.: State Board of Health. 44 pp. Free.

COMMUNITY HEALTH. Laurence B. Chenoweth and Whitelaw Reid Morrison. (3rd ed.) New York: Appleton-Century, 1949. 301 pp. Price, $3.00.

DEVELOPMENT OF GYNAECOLOGICAL SURGERY AND INSTRUMENTS. James V. Ricci. Philadelphia: Blakiston, 1949. 594 pp. Price, $12.00.

DYNAMIC APPROACH TO ILLNESS. A Social Work Guide. Frances Upham. New York: Family Service Association of America, 1949. 200 pp. Price, $3.00.

ECOLOGY OF HEALTH. New York Academy of Medicine Institute on Public Health, 1947. Edited by E. H. L. Corwin. New York: Commonwealth, 1949. 196 pp. Price, $2.50.

EVALUATION GUIDE. An Outline for the Self Evaluation of a Local Tuberculosis Association and Its Relation to the Tuberculosis Control Program. New York: National Tuberculosis Asso., 1949. 71 pp.

EXAMINATION OF WATERS AND WATER SUPPLIES. Edwin Windle Taylor. (6th ed.) Philadelphia: Blakiston, 1949. 819 pp. 52 illus. Price, $12.00.

FOOD TECHNOLOGY, OUTLINES OF. Harry W. von Loesecke. (2nd ed.) New York: Reinhold, 1949. 585 pp. Price, $7.50.

GETTING ALONG IN THE FAMILY. Jane Mayer. New York: Columbia University, Teachers College. 44 pp. Price, $.60.

GROWING THROUGH SCHOOL LUNCH EXPERIENCES. Tallahassee, Fla.: Florida State Department of Education, 1948. 177 pp. Price, $.85.

GUIDE TO THE DIAGNOSIS OF OCCUPATIONAL DISEASES. The Industrial Health Division Department of National Health and Welfare and The Division of Industrial Hygiene Department of Health for Ontario. Ottawa: King's Printer, 1949. 317 pp. Price, $1.00.

HOSPITAL CARE, A PATTERN FOR. Final Report of the New York State Hospital Study. Eli Ginzberg. New York: Columbia University Press, 1949. 365 pp. Price, $4.50.

HOSPITAL LAUNDRY. MANUAL OF OPERATION. Chicago, Ill.: American Hospital Association. $1.50 to members. $2.25 to nonmembers.

HUMAN GROWTH. Lester F. Beck. New York: Harcourt, Brace, 1949. 124 pp. Price, $2.00.

HYPNOTHERAPY OF WAR NEUROSES. John G. Watkins. New York: Ronald Press, 1949. 384 pp. Price, $5.00.

MEAT AND MEAT FOODS. Lloyd B. Jensen. New York: Ronald Press, 1949. 212 pp. Price, $3.75.

NATIONAL HEALTH SERVICE ACT IN GREAT BRITAIN. A Review of the first year's working. London: The Practitioner. 108 pp. Price, $2.00.

NUTRITIONAL DATA (Formerly Nutritional Charts). Compiled by Harold A. Wooster, Jr., and Fred C. Blanck. Pittsburgh, Pa.: H. J. Heinz, 1949. 120 pp. Free.

PERSONALITY DEVELOPMENT AND ITS IMPLICATIONS FOR NURSING AND NURSING EDUCATION. Proceedings of an Institute on Nursing Education, November 4–6, 1948. Springfield, Ill.: State Department of Public Health. 124 pp.

PUBLIC HEALTH IN POLAND. New York: Polish Research and Information Service. 31 pp.

REVIEW OF CURRENT RESEARCH AND DIRECTORY OF MEMBER INSTITUTIONS. Iowa City, Iowa: Engineering College Research Council of the American Society for Engineering Education, State University of Iowa. 186 pp. Price, $1.75.

SAFE AND HEALTHY LIVING (rev. ed.). Grades One through Eight:

Spick and Span, Grade I. 119 pp. Price, $1.16.

The Health Parade, Grade II. 184 pp. Price, $1.24.

Growing Big and Strong, Grade III. 252 pp. Price, $1.28.

Safety Every Day, Grade IV. 257 pp. Price, $1.32.

Teachers Guide I for above books. 158 pp. Price, $1.68.

Doing Your Best for Health, Grade V. 298 pp. Price, $1.40.

Building Good Health, Grade VI. 297 pp. Price, $1.44.

Helping the Body in Its Work, Grade VII. 314 pp. Price, $1.52.

The Healthy Home and Community, Grade VIII. 339 pp. Price, $1.56.

J. J. Andress, I. H. Goldberger, M. P. Dolch, and G. T. Hallock. Boston, Mass.: Ginn and Company, 1949.

TUBERCULOSIS ASSOCIATION. ITS ORGANIZATION AND ADMINISTRATION. New York: National Tuberculosis Association, 1949. 87 pp.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Thomas J. Benton, M.D., Willow Springs, Ill., Health Officer

W. H. Buck, M.D., Copiah County Health Dept., Hazlehurst, Miss., County Health Officer

John M. Canakaris, M.D., P. O. Box 29, West Palm Beach, Fla., Asst. Director, Palm Beach County Health Unit

Edward J. Frishwasser, M.D., M.P.H., 2190 Boston Road, Bronx, N. Y., Asst. to Director, Office of District Health Administration, City Dept. of Health

Charles R. Gardipee, Jr., M.D., 3159 Ivy St., Los Angeles 34, Calif., Public Health and Communicable Disease Physician, Los Angeles County Health Dept.

Samuel I. Glover, M.D., 600 West 168th St., New York 32, N. Y., Student, School of Public Health, Columbia Univ.

George F. Reeves, M.D., Richmond County Health Dept., Rockingham, N. C., County Health Officer

George E. Riley, M.D., M.P.H., P. O. Box 143, Jackson 5, Miss., Hinds County Health Officer

Miriam Sachs, M.D., 19 West 65th St., New York 23, N. Y., Health Officer in Training, City Dept. of Health

Max H. Teitler, M.D., 215 Buena Vista, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Gustav Vig, M.D., 516-9th Ave., S.E., Minneapolis, Minn., Student, School of Public Health, Univ. of Minnesota

Victor D. Washburn, M.D., 822 Washington St., Wilmington, Dela., City Health Commissioner

Capt. Carl K. Youngkin (MC) USN, 460 West 24th St., Apt. 16A, New York 11, N. Y., Post-graduate student, Syphilology and Dermatology, Skin and Cancer Unit, New York Univ.

Laboratory Section

Warren R. Borneman, 4663 Stenton Ave., Philadelphia 44, Pa., Vice-President, National Drug Co.

Mario J. Cefalo, B.S., 333 Leonard St., Brooklyn 11, N. Y., Laboratory Asst. in Bacteriology, City Dept. of Health

Joseph M. Chernaik, B.S., 136-21 Roosevelt Ave., Flushing, N. Y., Owner and Director, Long Island Laboratories

Glenn J. Copeland, M.D., Clifton Springs Sanitarium & Clinic, Clifton Springs, N. Y., Director of Laboratories

Ruth M. Dassel, 850 Montrose Ave., Columbus 9, Ohio, Bacteriologist, City Dept. of Health

Isabel R. Dimmick, M.S., New Jersey College for Women, New Brunswick, N. J., Asst. Instructor in Bacteriology

Dorothy J. Goeckeritz, B.Sc., 156 Clifton Ave., Clifton, N. J., Laboratory Technician, Paterson Board of Health

Betty G. Harris, 418 S. Cloverdale, Los Angeles, Calif., Senior Bacteriology Student, Univ. of California at Los Angeles

A. L. Kappus, Marquette Medical School, 561 No. 15 St., Milwaukee, Wis., Professor of Bacteriology

George H. Kostant, M.D., 2 Peter Cooper Rd., New York 10, N. Y., Private Practice

James V. Lawrence, M.S., 2670 Defiance Drive, Apt. E, Columbus 10, Ohio, Graduate Student, Ohio State Univ.

M. Noel Lombard, M.A., 256 Elm St., Everett 49, Mass., Asst. in Sanitary Biology, Harvard Univ.

Jack G. Makari, M.D., D.T.M.&H., Tapline Hospital, Trans-Arabian Pipe Line Co., Beirut, Lebanon, Senior Physician

Ann Pollak, M.D., Queens General Hospital, Jamaica 2, N. Y., Resident in Pathology

Roslyn L. Schuman, Ph.D., 3505 Perry Ave., Bronx, N. Y., Serologist, Kingsbridge Veterans Hospital

Jack M. Tadman, M.S., Univ. of Toledo, Toledo 6, Ohio, Instructor of Bacteriology

H. Mac Vandiviere, Ph.D., State Dept. of Public Health Laboratory, Atlanta 3, Ga., Supervisor, Research Evaluation Unit

Richard V. Walker, B.S., 903 Jackson St., Albany, Calif., Assoc. in Public Health Laboratory Procedures, Univ. of California

Statistics Section

Raul Arrieta-Larrosa, Juan Paullier 1474,

Apto. 5, Montevideo, Uruguay, S. A., Oficial Primero, Departmento de Estadistica Vital, Ministerio de Salud Publica

Fraser Harris, Dominion Bureau of Statistics, Ottawa, Ont., Canada, Director, Health and Welfare Division

Arthur H. Wyman, B.A., 1133 Fairview Ave., South Pasadena, Calif., Health Program Representative, U. S. Public Health Service

Engineering Section

Arturo L. Berti, Dr.Eng., Ministry of Public Health, Maracay, Venezuela, S. A., Chief Engineer, Malaria Division

Joseph H. Coffey, B.C.E., 605 Volunteer Bldg., Atlanta, Ga., Sanitary Engineer (R), Fly Control Branch, Engineering Division, Communicable Disease Center, U S.P.H.S.

W. Graham Cole, B.S., Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N. Y., Asst. Secy.

S. R. McGurk, B.S.C.E., 1098 West Michigan St., Indianapolis 7, Ind., Chief, Housing and Schools Section, State Board of Health

Industrial Hygiene Section

Thomas F. Mancuso, M.D., 4197 West Granville Rd., Worthington, Ohio, Chief, Division of Industrial Hygiene, State Dept. of Health

William A. McGilvray, 825 Crescent Drive, Box 606, Rt. 8, Lakewood, Colo., Industrial Hygiene Engineer, Division of Industrial Medicine, Univ. of Colorado Medical Center

Louis W. Spolyar, M.D., 1098 West Michigan St., Indianapolis, Ind., Director, Division of Industrial Hygiene, State Board of Health

Izydor Werbner, M.D., M.P.H., Crownsville State Hospital, Crownsville, Md., Physician

Food and Nutrition Section

Prof. Spyros Dontas, Hellenic Hydrobiological Institute, Athens Academy, Athens, Greece, General Overseer

Myrtle B. Van Horne, B.S., 1014 E. St. Joseph, Lansing, Mich., Consultant Dietitian, State Dept. of Health

Maternal and Child Health Section

Lavinia G. M. Fox, M.D., M.S.P.H., 38 Park St., Tenafly, N. J., Pediatrician, City Health Dept. and Child Health Station

Marguerite B. Harris, 703 Watchung Ave., Plainfield, N. J., Public Health Nurse, Plainfield Visiting Nurse Assn.

Lewis J. Schloss, M.D., 170 East 77th St., New York, N. Y., Private Practice and Clinic Physician, Child Health Station, City Dept. of Health

Pearl Toivonen-Leppo, M.D., 505 N. Williams, Ludington, Mich., Mason County Health Officer

Public Health Education Section

Annette S. Boutwell, M.S.P.H., Extension Service, State College, Miss., Health Education Specialist, Agricultural Extension Service and State Board of Health

Elizabeth Bronk, B.A., 45 E. Putnam Ave., Greenwich, Conn., Exec. Secy., Greenwich Health Assn.

Horace A. Brown, A.B., 65 Wethersfield Ave., Hartford, Conn., Exec. Director, Connecticut Heart Assn.

Anne R. Grant, M.P.H., 265 Elgin St., Ottawa, Ont., Canada, Health Education Consultant, Canadian Tuberculosis Assn.

Grace T. Hallock, A.B., Milton-on-Hudson, N. Y., Director, Editorial Bureau, Health and Welfare Division, Metropolitan Life Insurance Co.

Louis W. Hill, Jr., Ph.B., c/o A. A. Heckman, Family Welfare Assn., Wilder Bldg., St. Paul 2, Minn., Treasurer, Minnesota Cancer Society and Minnesota Society for Prevention of Blindness

Joseph Kadish, M.A., 151 West 75th St., New York 23, N. Y., Health Educator, New York Tuberculosis and Health Assn.

George W. Nuffer, M.P.H., Bargersville, Ind., Student, School of Public Health, Univ. of North Carolina

Public Health Nursing Section

Elizabeth Glenn, B.S., 22032 Cameron St., Hayward, Calif., Unemployed (formerly affiliated with Palo Alto Health Dept.)

Beatrice Heaton, B.S., 154 East 63rd St., New York 21, N. Y., Asst. to Director in Community Activities, Dept. of Educational Nursing, Community Service Society

Epidemiology Section

Glen R. Leymaster, M.D., 100 N. Beechwood Ave., Baltimore 28, Md., Assoc. Professor of Public Health, Medical School, Univ. of Utah

Charles H. Moseley, M.D., M.P.H., Tufts Medical College, Boston 15, Mass., Professor of Military Medicine

Irving Rosenbaum, M.D., Ph.D., 1702 Newkirk Ave., Brooklyn 26, N. Y., Unemployed (formerly Deputy Medical Superintendent, Bellevue Hospital)

School Health Section

Emanuel Dubow, M.D., M.A., 36 Gramercy Park, New York 3, N. Y., Physician in Charge, School Health Service, Washington-Greenpoint District, City Dept. of Health

C. A. Greenleaf, M.D., 414 Laurens St., Olean,

N. Y., School Health Director, Olean and Cattaraugus County

Paul W. Schem, M.S., 451 Jackson St., Hempstead, N. Y., Principal, Hempstead School System

Ruth C. Waller, R.N., B.S., 68 West 58th St., New York 19, N. Y., Staff Nurse, Suffolk County Dept. of Health

Dental Health Section

George A. Bunch, D.D.S., Wade Hampton Office Bldg., Columbia, S. C., Director, Division of Dental Health, State Board of Health

Gerald J. Cox, Ph.D., 4731 Stanton Ave., Pittsburgh 1, Pa., Professor of Dental Research, School of Dentistry, Univ. of Pittsburgh

Belle C. Fiedler, B.S., 809 S. Memorial Drive, Appleton, Wis., Public Health Dental Hygienist, State Board of Health

Hyman Israel, D.D.S., M.P.H., 1320 Rosedale Ave., Bronx 60, N. Y., Dentist, Veterans Administration

Harry S. Zappler, D.D.S., 35 Davis Ave., White Plains, N. Y., Dentist

Medical Care Section

Charlotte Bray, M.A., 812 N. College St., Bloomington, Ind., Secy., Health Section, Council of Social Agencies

Lee D. Cady, M.D., A.M., Veterans Administration Hospital, 2002 Holcombe Blvd., Houston 4, Tex., Manager

Henry M. Fairley, State Board of Health, Columbia, S. C., Director, Hospital Division

Nathan E. Finkelstein, M.D., 324 East 52nd St., Brooklyn 3, N. Y., Private Practice

John W. Hekeley, 91 Lafayette St., Hartford, Conn., State Supervisor, Rehabilitation of the Tuberculous, State Dept. of Education

Ester Posner, B.A., International Workers Order, 80 Fifth Ave., New York, N. Y., Secy., New York Medical Plan

Milton Rose, M.D., 145 Addison St., Palo Alto, Calif., Lecturer in Psychiatry, Medical School, Univ. of California

Ramona L. Todd, M.D., Ph.D., Univ. of Minnesota, Minneapolis 14, Minn., Asst. Professor of Public Health and Physician, Students' Health Service

Gertrude L. Wetzel, B.S., Box 1058, Juneau, Alaska, Hospital Administrator, Alaska Dept. of Health

Unaffiliated

Augusto L. Ayroza-Galvao, M.D., Faculty of Hygiene, Caixa Postal 99-B, Sao Paulo, Brazil, S. A., Adjunct Professor of Parasitology, Univ. of Sao Paulo

Carl D. Neidhold, M.D., 103 West College Ave., Appleton, Wis., Physician and Surgeon; President, Appleton Board of Health

Ted H. Pfeiffer, 68-38 Yellowstone Blvd., Apt. A-17, Forest Hills, N. Y., Interested Citizen

Pradith Siddhichai, M.B., 615 N. Wolfe St., Baltimore, Md., Health Officer, Dept. of Health, Thailand

A.P.H.A. membership blank on page XXIX

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Staff school nurse for small, well organized school health department, Pacific Coast. Beginning salary $2,850 to $3,200 depending on training; 9 months; liberal vacation. Annual increment for 10 years up to $5,000; tenure after 3 years. B.A. and P.H.N. degrees; own car. Send photograph, age, degrees, training and experience, marital status, number of children. **Box A–77,** Employment Service, A.P.H.A.

Supervisor of Public Health Nurses—County Health Department; generalized public health nursing program including 3 Crippled Children's Clinics and 5 Otological Clinics each year. Three weeks study leave every other year, 15 days vacation, 12 days sick leave. State Retirement System. Qualifications: Bachelor's degree, Public Health Nursing Credential with course of 8 months in supervisoral training and at least 2 years' experience in public health nursing in a generalized public health program. Opening salary $300 with increases to $329. Must own car; 8¢ per mile allowed. R. O. Ingham, M.D., Health Officer, Santa Cruz County, Dept. of Public Health, Santa Cruz, Calif.

Tuberculosis Control Physician and **Cancer Control Physician.** To direct a state-wide program. (These are two separate positions.) Qualifications for both are: at least 3 years' experience, preferably in the field of public health. Must be a graduate of approved medical school and at time of appointment or within 3 years thereafter, 1 year of graduate training in a school of public health. Salary $7,200 to $8,400 depending on qualifications. Vacation, sick leave, retirement, Civil Service. Write: Harold M. Erickson, M.D., State Health Officer, Oregon State Board of Health, 1022 S. W. 11th Avenue, Portland 5, Ore.

Deputy State Director—Salary $9,000. Must be eligible for West Virginia Medical License. Duties to include medical supervision of local health services, and all state level units not included under the Director of Disease Control. **Director of Disease Control**—salary $9,000. Must be eligible for West Virginia Medical License. To direct programs of Cancer Control, Venereal Disease Control, Communicable Disease Control, Tuberculosis Control, and Heart Disease Control. For both these positions write to: N. H. Dyer, M.D., State Director of Health, Dept. of Health, Charleston 5, W. Va.

Three **Medical Directors,** Sections of Tuberculosis, Cancer and Heart Disease Control of the Division of Preventive Medicine. Training and experience in each specialty necessary. Salary $7,200, plus travel allowance. S. J. Phillips, M.D., State Health Officer, Louisiana State Dept. of Health, New Orleans 7, La.

Medical Health Officer—Beginning salary $5,400, car furnished. **Public Health Nursing Supervisor**—Beginning salary $3,000, car furnished. **Public Health Nurse**—Beginning salary $2,640, car furnished. Mr. Clark Nichols, Chairman, Scotts Bluff County Board of Health, Gering, Neb.

Public Health Nurse—generalized program, county of 35,000, 100 miles west of Chicago. Salary $235 per month with $65 travel allowance each month. Three week vacation; 2 weeks' sick leave. Good retirement system. The President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

City Health Officer, city of 22,000, degree required, experience desirable. Carl E. Pratt, Sr., Mayor, Hastings, Neb.

Nursing Consultant, Pediatrics salary range $4,600 to $5,350. Excellent opportunity for career service for nurse highly qualified by education and experience. Write: Mrs. Josephine Pitman Prescott, Director, Bureau of Public Health Nursing, Health Dept., 300 Indiana Avenue, N.W., Washington, D. C.

Public Health Dentist to plan and direct a state-wide program of Dental Health Education. Minimum of 3 years' experience in general practice of dentistry including 1 year of public health dentistry; M.P.H. degree preferred; ability to secure license to practise in Oregon. Salary range $6,600 to $7,800. Vacation, sick leave, and retirement. **Hospital Nursing Consultant**—to give nursing consultant service on a state-wide basis to hospital nursing staffs and public health nurses on maternity and

new-born infant care. Minimum of 3 years' experience in hospital nursing care of maternity patients and new-born infants. In addition to 3 years' nursing course must have had 4 years of college or university training; $3,600 a year to start; advances to $4,440; $7.50 per diem plus 6¢ mileage. Vacation, sick leave, retirement. Write: Harold M. Erickson, M.D., State Health Officer, Oregon State Board of Health, 1022 S. W. 11th Avenue, Portland 5, Ore.

Dental Educator for city public health department, preferably with elementary school teaching and dental hygienist experience. Present salary range $220 to $265 per month; automatic salary increases; semiannual cost-of-living salary adjustments; $25 per month mileage allowance; state-wide retirement program. Write: Personnel Division, City Hall, Madison 3, Wisc.

County Health Officer—3 years' experience as Public Health Physician following graduation of medical school of recognized standing, including or supplemented by 1 year of internship in recognized general hospital and supplemented by graduation from recognized school of public health with Master's degree or any equivalent combination of experience or training. Salary range $8,400–$9,300 plus necessary travel in own car at 7½¢ per mile. Palm Beach County, population approximately 125,000, assistant health officer. Write: Wilson T. Sowder, M.D., State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

Public Health Physicians—male; for School Health and Medical Care Services —low income groups. Five day, 40 hour week; extra increment for overtime; excellent retirement system. Entrance salary $5,101 to $5,641, plus up to $480 for car allowance. Write: Dr. Carl A. Wilzbach, Commissioner of Health, Rm. 238, City Hall, Cincinnati 2, Ohio.

Public Health Nursing Coördinator for Basic Curriculum in a University School of Nursing. Faculty status—Assistant Professor of Nursing. Salary $4,000, liberal vacation. Minimum requirements: graduate degree, completion N.O.P.H.N. approved public health nursing program or its equivalent. Experience in public health nursing at least 6 years: 2 years staff nurse with qualified supervision in a family health agency; 3 years supervisor, assistant director in education or executive director; 1 year teaching in a university school of nursing or its equivalent. Write: Anna C. Gring, Chairman, Public Health Nursing Dept. Boston University School of Nursing, 264 Bay State Rd., Boston 15, Mass.

Health Officer, county of 35,000—100 miles west of Chicago. Salary $600 per month; $65 per month travel allowance. Retirement system, 3 weeks' vacation and 2 weeks' sick leave with pay. Excellent staff. Write: President, Lee County Board of Health, Dixon, Ill.

Director for one county health department located in north central Michigan. Population approximately 20,000. Write: Wexford County Health Unit, Cochrane Bldg., Cadillac, Mich.

Deputy Health Commissioner for a well organized County Health Department in Michigan. Must have training in public health. Salary $7,500 plus $600 traveling expense. **Supervising Nurse,** must have training in public health and previous supervisory experience. Salary $3,500 plus traveling expense. Write: **Box A-78,** Employment Service, A.P.H.A.

Public Health Nurses—two, for generalized program. Salary range $215–$275, vacation allowance, sick leave, car furnished, in-service training, university field training program, merit system. Write: Thomas R. Hood, M.D., Health Officer and Director, Topeka City–Shawnee County Health Dept., Topeka, Kans.

Public Health Physician for field office of State Health Department, university town. Salary range $480–$638 per month with excellent possibility for promotion for highly capable individual. Excellent civil service and retirement system. Write: Roland R. Cross, M.D., Director, State Dept. of Public Health, Springfield, Ill.

Health Commissioner—Salary range—$10,000–$12,000, depending upon qualifications. Must be licensed to practise in Illinois or eligible for reciprocity. Write: Wm. A. Michael, M.D., Chairman Personnel Committee, Peoria Board of Health, 410 Main St., Peoria 2, Ill.

Superintendent for TB Sanatorium, 160 beds, new building. Applicant must meet State requirements. Challenging position for doctor with interest in tuberculosis work. Write: Phil J. Brau, President, Board of Trustees, Genesee County Tuberculosis Sanatorium, Flint, Mich.

Senior Health Educator for TB Society in large metropolitan city. Master's degree in Public Health with a minimum of 2 years' experience in public health education. Starting salary $330 a month with increases every 6 months. 8¢ a mile for

use of car. Liberal vacation and sick leave. Write: Norbert Reinstein, Tuberculosis and Health Society, 153 E. Elizabeth, Detroit 1, Mich.

Public Health Engineer as Chief, Division of Sanitation. Salary $4,800 to $5,760. Suburban and rural county of 140,000 population with strong citizen support and a well organized county-wide health program. Adjacent to Washington, D. C. Write: Montgomery County Personnel Board, Courthouse, Rockville, Md.

Associate Bacteriologist, $326–$370 starting salary dependent on training and experience. **Senior Assistant Bacteriologist,** $262–$290. Education, training and experience requirements are similar to those of A.P.H.A. standards. Write: Joseph C. Willett, D.V.M., Director of Laboratories, Dept. of Public Welfare, Div. of Health, St. Louis 3, Mo.

Announcements

Regular Corps Examinations, U. S. Public Health Service

Position Title	Beginning Salary (with dependents)	Deadline for Application	Examination Date
Bacteriologists		Feb. 20, 1950	Mar. 20–22
Asst. Scientist	$4,486.56		
Senior Asst. Scientist	$5,346.00		
Nurse Officers		Feb. 20, 1950	Mar. 20–22
Junior Asst.	$3,969.00		
Assistant	$4,486.56		
Senior Asst.	$5,346.00		

Application forms and additional information may be obtained from:
Surgeon General, U.S.P.H.S., Federal Security Agency,
Washington 25, D. C., Attention: Division of Commissioned Officers

Examinations, San Diego County Civil Service

Applications for an examination for Mental Health Consultant will be received until further notice. Salary—$7,764–$8,556. For further information and application forms write to: Civic Center, Rm. 402, San Diego 1, Calif.

Opportunities for Nurses in Arizona

Arizona Merit System Council announces continuous recruitment for:

Position:	Salary:
Public Health Nurse Asst.	$205
Public Health Nurse	$260–$310
Senior Public Health Nurse	$280–$330
Registered Professional Nurse	
Dept. of Public Welfare	$200–$230
State Dept. of Health	$195–$235

For application forms write to: Zilpha Fuller, Supervisor, Merit System Council, Rm. 107, Winters Bldg., 39 W. Adams St., Phoenix, Ariz.

Opportunities Abroad

Positions as **Veterinarians** available with Civil Affairs in Japan. Involves food processing, food sanitation and control of communicable diseases in animals. Salary $6,400 plus 10% foreign post differential. Free housing provided for principal and family, with transportation to and from point of hire paid by U. S. Government providing contract is completed. Employee must sign two year contract.

Position as **Health and Welfare Statistician** available with Public Health and Welfare Section, Ryukyus Military Government in Okinawa. Salary $5,400 plus 25% foreign post differential. Employee must sign one year contract. Transportation to and from point of hire will be paid by the U. S. Government providing contract is completed. For details and application form, write Chief, Public Health and Welfare Section, GHQ, SCAP, APO 500, c/o Postmaster, San Francisco, Calif.

POSITION WANTED

Sanitary Engineer — B.S., M.P.H. degrees. 8½ years' experience in sanitary engineering, rural and metropolitan areas including director of division of sanitation for a county health department in a highly industrialized and thickly populated county; administrative ability. Desires responsible position in industry or with official or voluntary agency. Write: **Box E-12,** Employment Service, A.P.H.A.

Advertisement

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

Opportunities Available

PUBLIC HEALTH PHYSICIANS FOR THE FOLLOWING: (a) District health officer; interesting location, Pacific Northwest; $8,000–$10,000, traveling expenses. (b) Young woman physician to join staff of university student health department; enrollment 6,000; quarters available on campus; Middle West. (c) To direct school of public health now being established by state university. (d) Tuberculosis control physician, rural pediatrician, cancer control physician and public health officers; state department of health; expansion program. (e) Director of student health; young women's college located in state university town; enrollment: 2,300; faculty: 250; should be interested in contribution of health to general education; substantial salary; consultation privileges. (f) Directors for maternal and child health, epidemiology and industrial hygiene and, also, several district health officers; salaries for directors dependent upon qualifications; for district health officers, $8,000. PH1-1 Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—(a) Health educator; Master's degree and teaching experience desirable; generalized health educational program; university town of 95,000. (b) Public health engineer; minimum three years' experience, preferably in tropical or backward countries; minimum $6,000, maintenance, other prerequisites; Arabia. (c) Supervisor of health education; duties: directing program among lay and professional groups; state department of health. (d) Public health engineer to direct division of sanitation, county health department; East. (e) Health educator with writing experience to join permanent staff of publishing company; $4,000–$5,000. (f) Epidemiological research analyst to conduct community surveys and to evaluate combined control program of tuberculosis association and health department; duties include research; degree, year's post-graduate training and several years' public health experience required; large city outside Continental United States. PH1-2 Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—(a) Director of public health nursing, supervisor of public health nursing and, also, assistant supervisor; municipal health department, West Indies. (b) Nursing consultant; duties consist of serving as consultant on state-wide basis to hospital nursing staffs and public health nurses for maternity and new-born infant care; headquarters, university medical center. (c) Director of public health nursing; municipal health department; staff of 12 field nurses, one supervisor; town of 80,000, short distance from Chicago. (d) Supervisor of nurses and, also, staff nurses; generalized program; California. (e) Director, city-county health unit; duties consist of directing staff of seventeen nurses and representing health department at community meetings; college town, 100,000, Midsouth. (f) Public health nurse to direct child welfare program; orthopedic training desirable; headquarters in university town; $4,200–$4,800; Northwest. PH1-3 Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Situations Wanted

Health Educator, Ph.D.; four years, physical director, public schools; several years, associate director, health education, state department of health; five years on faculty, university department of public health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health bacteriologist; Ph.D., M.S., Bacteriology, M.S., Biochemistry, candidate for Master's in Public Health Bacteriology; eight years' experience in laboratory work; six years, research bacteriology; prefers teaching and research appointment in public health bacteriology; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health dentist; D.D.S., M.S.D. (Children's Dentistry); M.P.H. (Public Health); several years' teaching experience; has had considerable research on dental caries; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health nursing administrator; B.S. (Education); M.P.H.; four years, staff public health nurse; four years, director, cancer health education unit; past several years, director, program, industrial and school health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health physician; Master's in Public Health, Johns Hopkins; five years, county health officer; six years, director, metropolitan department of health; certified by American Board of Preventive Medicine and Public Health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Young woman physician is available for teaching or administrative post in health and physical education; B.S. (Physical Education); M.A. (Education); ten years' teaching experience in physical and health education before entering medical school; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Sanitary engineer; B.S., Civil Engineering; several years, sanitary engineer, tropics; past four years, chief, engineering division, county department of health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

BCG POLICY

A recent meeting of the American Trudeau Society, the Medical Section of the National Tuberculosis Society, recommended that commercial firms be licensed under the National Institutes of Health to produce BCG vaccine, as soon as suitable standards can be perfected. It also emphasized its 1948 statement that BCG does not furnish complete protection and that further basic research is needed on the problem of artificial immunization against tuberculosis. BCG vaccination is recommended particularly for vulnerable groups such as doctors, nurses, laboratory personnel, and others subject to unusual exposure to the disease. And since BCG gives incomplete, not absolute, protection other more effective measures should be continued and intensified such as:

a. Improvement of living conditions and the general health
b. Case finding
c. Prompt treatment of active cases
d. Custodial care of those not amenable to accepted forms of therapy
e. Adequate rehabilitation

LABORATORY TRAINING COURSES

The Atlanta Communicable Disease Center of the Public Health Service has recently announced its 1950 schedule of laboratory training courses. A total of 23 courses of 1, 2, or 3 weeks beginning January 9 is to be given during the year on the laboratory diagnosis of a variety of diseases, rabies, tuberculosis, influenza, and many others. Three of the courses are repeated during the year. The Center has prepared a single sheet listing the courses and their dates, together with a graph which shows, in addition, whether the courses are given at the Chamblee, Atlanta, or Montgomery stations. This, together with information as to eligibility, maintenance costs, etc., from Medical Director in Charge, Communicable Disease Center, 605 Volunteer Bldg., Atlanta 3.

ECPD ELECTS FOR 1949–1950

The Engineers' Council for Professional Development at its 17th annual meeting elected the following officers for 1949–1950:

Chairman—Harry S. Rogers, president, Polytechnic Institute of Brooklyn
Vice-chairman—L. F. Grant, Queen's University and Royal Military College, Kingston, Ontario
Secretary—C. E. Davies, Secretary American Society of Mechanical Engineers, New York

HOSPITAL FACILITIES FOR INDIANS

Before its recent adjournment, the United States Congress passed a bill making one and one half million dollars available toward the construction of a Bernalillo County general hospital in Albuquerque, N. M. This aid was provided in addition to aid under the Hill-Burton Hospital Construction Act on condition that 100 beds be reserved for Indian patients who are wards of the United States Government. In passing the Act, Congress observed that a community hospital serving all persons is more economical and otherwise more satisfactory than erecting special hospitals for special groups.

AWARD TO DR. KLEINSCHMIDT

Harry E. Kleinschmidt, M.D., received the Elisabeth Severance Prentiss National Award in Health Education at the 9th Anniversary Civic Luncheon of the Cleveland Health Museum in Cleveland's Hotel Statler on November 14. Dr. Bruno Gebhard, museum director, made the presentation. Dr. Klein-

schmidt, retired from formal service last June as medical director of the North Atlantic Area, American Red Cross (1942–1949). Previously he had been a staff member of the American Social Hygiene Association (1917–1923), and of Toledo Public Health Association (1923–1925), director of health education in the Ohio Department of Health (1925–1927), and the National Tuberculosis Association (1927–1942).

Dr. Kleinschmidt was one of the founders of the Health Education Section, A.P.H.A., of which he is a Fellow. Among other "firsts" credited to him are: the first health exhibit in an army camp; first use of animated diagrams in health education; and first use of a healthmobile. His contributions in advancing the use of motion pictures in health education are also notable.

Given annually since 1944 by the Cleveland Health Museum, the award serves a dual purpose: (1) to honor the memory of the Museum's first foundation benefactor, and (2) to encourage, through recognition, outstanding work in the field of health. Previous recipients of the award have included: D. B. Armstrong, M.D., Metropolitan Life Insurance Co., 1948; W. W. Bauer, M.D., American Medical Association, 1947; Mary P. Connolly, University of Michigan, 1946; C.-E. A. Winslow, Dr.P.H., Yale University, 1945; Mary S. Routzahn, formerly with the Russell Sage Foundation, and her deceased husband, Evart G., 1944.

SOCIETY OF PUBLIC HEALTH EDUCATORS ORGANIZED

A new organization, the Society of Public Health Educators, was formed on October 23, 1949, following an executive meeting in the Statler Hotel, New York, where members were attending the 77th annual meeting of the A.P.H.A.

It is stated that the society will be particularly concerned with research in public health education methods and with the development and promulgation of professional standards. Members will work in close coöperation with the American Public Health Association. Membership in the new organization will be limited to those professionally engaged in public health education.

Plans for the new society had been discussed at various meetings during the past two years. No formal organization was set up, however, until October 23, when an interim commission was formed and officers and an executive committee were elected. The commission, in addition to those attending the meeting, included members of a temporary steering committee appointed two years ago to study the possibilities of forming such a society.

Temporary officers elected were as follows: *Chairman*, Clair E. Turner, Dr.P.H., New York City; *Secretary*, J. Louis Neff, Houston; *Treasurer*, Professor Ruth E. Grout, Minneapolis. The Executive Committee consists of Vivian V. Drenckhahn, New York City; Lucy S. Morgan, Ph.D., Chapel Hill, N. C.; Mary H. Parks, Albany, N. Y.; C. Mayhew Derryberry, Ph.D., Washington, D. C.; Homer N. Calver, New York City; and the elected officers.

1949 NOBEL PRIZE FOR MEDICINE

The 1949 Nobel Prize for Medicine has been awarded jointly to Dr. Walter Hess, director, Physiological Institute of the University of Zurich, Switzerland, and Dr. Antonio C.de A. F. Egas Moniz, professor emeritus of neurology, Lisbon University of Medicine, Portugal, for discoveries in the function of the brain. The winners were chosen by the Caroline Institute of the University of Medicine, Stockholm, and the awards were presented at a ceremony in Stockholm on December 10 along with other 1949 Nobel Awards. Dr. Hess's award was made for his studies of the reaction of animals to electric shocks that helped dispel previous theories concerning the

effect of instinct, power of observation, and natural intelligence on their behavior. The award to Dr. Moniz was made for devising and perfecting prefontal lobotomy.

N.T.A. VETERANS' SERVICE

A Veterans' Service Division has been established by the National Tuberculosis Association. Its main objectives are liaison and coöperation with the Veterans Administration, establishment of working relations with veteran and other groups concerned with veterans' problems and the collection, evaluation, and distribution of information to veterans' groups, tuberculosis associations and the Veterans Administration. The Division is headed by Lt. Col. M. J. Plishner, active in the Military Intelligence Branch of the Officers Reserve Corps. He was formerly an associate in the Program Development Service of the National Tuberculosis Association. The work of the new division will be carried on under a joint committee of the N.T.A. and the Association of Tuberculosis Secretaries, as adopted by the Association's Board of Directors on the recommendation of the 1948–1949 Interim Committee on Veterans' Affairs.

MENTAL HOSPITAL SERVICE

Through a grant from the Commonwealth Fund, the American Psychiatric Association has established a clearing house for the interchange of technical information among mental hospitals and other institutions that care for psychiatric patients in the United States and Canada. Mental Hospital Service, as the clearing house is called, is directed by Daniel Blain, M.D., medical director of A.P.A., with offices in Washington, D. C., and with the help of a panel of technical consultants. At first the services will be free to the mental hospitals that request them, but it is expected that M.H.S. will eventually be self-sustaining through subscription fees.

The keystone of M.H.S. will be a monthly mental hospital news bulletin that will report news of current developments in clinical practices, hospital administration, community relations, legislation, architectural planning, accounting procedures, research, and other information that will help the hospitals improve patient treatment and care.

In announcing the new service, A.P.A. President George S. Stevenson, M.D., said, "This new service will bring to light the best practices of each hospital for the benefit of all, to the common end that more patients may be restored to their families and communities to lead normal, useful lives."

TWICHELL JOINS CONSULTANT FIRM

Allan A. Twichell, from 1937 to 1949 secretary of the Committee on the Hygiene of Housing, American Public Health Association, has joined the staff of Harrison, Ballard & Allen, Housing and Planning Consultants of New York City. As an executive in the firm's City Planning Department, Mr. Twichell will be connected with the Plan for the Rezoning of New York City currently under way with the City Planning Commission.

While secretary of the Committee on the Hygiene of Housing, he developed new housing survey procedures now widely used by municipalities in determining the quality of housing. Until recently also he was a lecturer at Yale University on public health and housing. Earlier he had served as research assistant to Clarence S. Stein and the late Henry Wright and as planning specialist for the TVA.

SENATOR HUMPHREY FORE... CONGRESSIONAL ACTION O... HEALTH INSURANCE

Senator Hubert H. Humphrey, M... nesota's Democratic Senator, releas... a formal statement on October 31 set...ng forth predictions with reference to ac-

tion in the forthcoming session of Congress. As the Washington Report on the Medical Sciences says, coming as these views do from a man who had been expected to lead the 1950 Congressional fight for the controversial title VII in the Thomas-Murray-Dingell Bill, and who has achieved a stature and won respect for his sincerity of purpose, these candid opinions bear a significance that will be appreciated by foes and friends alike of health insurance.

While acknowledging their shortcomings, Senator Humphrey says voluntary health plans should be aided and encouraged. More positively than it has ever been put before, he says that before this nation adopts compulsory health insurance it should enact laws on federal aid for medical education and local public health units; expansion of medical research, hospital construction and the maternal and child health programs; and special assistance to rural areas. These subjects represent the other six titles of the Thomas-Murray-Dingell Bill. National health insurance, says Senator Humphrey, is an extension of social security and "I have always been in favor of that principle." But he emphasizes that the time is not ripe for embracing it—that all the evidence is not in yet—that, in the meantime, the medical profession, the consumer and government should work together to bring voluntary prepayment plans to the peak of efficiency and economic soundness. In his own words:

"Those of us who favor the principle of social security insurance recognize the practical difficulties of a nationwide program of health insurance that would directly affect the life of every citizen in this nation. We understand that until these practical difficulties of administration are met, the legislative action might well be a disservice to the principle in which we believe. . . . It is my considered judgment, therefore, that legislation for health insurance is not yet in the legislative action stage and will not be in that stage, regardless of its merits, until there have been further hearings, further research and until a primary basic administrative formula has been developed. . . . In view of the great need not now being met by existing voluntary plans, I urge upon the medical profession and the consumer the improvement of voluntary health plans and the extension of coöperative medicine, group health programs and the development of health services for industrial workers through the processes of collective bargaining."

LOUISIANA ASSOCIATION OF PUBLIC HEALTH WORKERS

Adoption of a new constitution and election of officers highlighted the second regular meeting since 1941 of the Louisiana Association of Public Health Workers in Alexandria, August 20. The new officers are:

President—Ben Freedman, M.D., New Orleans
First Vice-President—H. L. Hortman, Alexandria
Second Vice-President—Margaret C. Moore, New Orleans
Secretary-Treasurer—Velma Brusse, Opelousas

TRAINING CIVILIANS IN ATOMIC RADIATION PROTECTION

Members of the Texas Health Department will be able to attend a special school on atomic defence being given by the U. S. Air Force School of Aviation Medicine at Randolph Field, Texas. The training in atomic defence was prepared primarily for medical personnel of the Air Force. However, special arrangements were made by the State Health Department for the admission of one state employee to each class conducted by the School of Aviation Medicine. Six members of the Health Department will thus receive training in the 6 two week courses to be given by June 30, 1950.

WICHITA AND SEDGWICK UNITE

Wichita and Sedgwick County (Kan-

sas) have completed the consolidation of their health departments under the full-time direction of Fred L. Mayes, M.D., who has been Wichita's health officer for the past year. The assistant director is John W. Turner, M.D., former Sedgwick County health officer, who also transfers to full-time status.

The new department has a joint medical advisory board. Its budget of $241,000 is contributed 50 per cent by the city, 24 per cent by the state from state and federal funds, 21 per cent by the county, and 5 per cent by contributions from local community health associations.

MEDICAL SCHOOL IN PUERTO RICO

Plans have been completed for the opening in 1950 of a School of Medicine at the University of Puerto Rico, San Juan. For the first year it will accept 50 students. In organizing the school and its faculty and curriculum, the Puerto Rico University has the consultant service of Harold W. Brown, M.D., professor of parasitology and acting director, Columbia University School of Public Health. The staff will be made up of Puerto Rico and mainland physicians, and facilities of the School of Tropical Medicine will also be available.

NEW NURSES IN OKLAHOMA

Josephine Daniel, R.N., director of the division of nursing, Oklahoma State Department of Health, reports that in recent months 14 new registered nurses have been assigned to duty with 12 full-time local health departments. In addition to the new nurses, two others have returned from a year's educational leave.

BCG PROGRAM ADVANCED IN PUERTO RICO

Through coöperative enterprise between the Insular Health Department and the U. S. Public Health Service, Puerto Rico contemplates tuberculin testing approximately 750,000 persons, followed by the immunization of two out of three eligible negative reactors. According to Dr. E. Garrido Morales, the Medical Officer in Charge, it appears that mass vaccination on the island is justified, with the tuberculosis mortality rate for 1948 of 179 per 100,000, a peculiar socio-economic structure, and less than 20 per cent of the needed hospital beds in accordance with accepted standards.

The Puerto Rico Medical Association has endorsed the vaccination plan which requests Puerto Rican parents to pay no attention to propaganda which is being carried out against the prophylactic program, urging them to authorize having their children vaccinated when so advised by the persons in charge of the project.

INSTITUTE ON HEALTH COUNCILS

Something in the nature of the first real "conclave" on the subject of community health councils took place November 29 and 30 at Princeton, N. J., when the Interagency Institute on Local and State Health Councils was held at Nassau Tavern under the auspices of the National Health Council.

The two day Institute was largely planned by and for executive and field staffs of the national health agencies who are members of the National Health Council. Approximately 90 persons attended, some in the capacity of "learners," others as panel participants, speakers, and chairmen of problem solving groups.

The scope of the institute may be seen in the topics of the first day's sessions: Why Are the National Agencies Interested in Local Health Council Development?—How Do Local Health Councils See Their Own Development and Philosophy?—Some State Level Developments. The second day's activities included concurrent problem solving sessions on financing, functions, and

program, membership, personnel, and methods of obtaining community action. Luncheon sessions were enlivened by observations by two social scientists, Dr. Earl Koos of the University of Rochester, N. Y., and Dr. Gordon W. Blackwell, of the University of North Carolina, Chapel Hill.

Representatives of a wide sampling of health councils throughout the country served as panel leaders and led in the exchange of information which was a highlight of the institute. However, "learners" and resource people constantly shifted roles, thus making for a great deal of give and take on the part of everyone.

Representatives were present from 21 national health organizations, 8 state health councils, 8 local health councils and 5 universities. The National Health Council will publish the proceedings of the institute and make them widely available.

LOOK "APPLAUDS" DR. EMERSON

The December 20 issue of *Look Magazine* in its monthly "Applauds" feature applauds Haven Emerson, M.D., for his lifetime goal: preventive medical aid for everyone, mentioning also his Lasker Award. The brief note is accompanied by a photograph and a pictograph representing Dr. Emerson's life preserving injections into every part of the United States map.

NATIONAL HEALTH COUNCIL EXPANDS MEMBERSHIP

At an October meeting of Delegates of the National Health Council, New York, the American Association of Medical Colleges and the National Society for Crippled Children and Adults were elected to active membership, bringing the total of active members to 21.

Other national agencies recently elected as active members include the American Hospital Association, American Medical Association, American Pharmaceutical Association, National Foundation for Infantile Paralysis, National Safety Council, and the American Association of Medical Social Workers. In addition, the American Diabetes Association, the American Physical Therapy Association, and the National Multiple Sclerosis Society have recently been made associate members. Thomas D. Dublin, M.D., is the Executive Director of the Council, 1790 Broadway, New York 19.

SPECIALTY BOARD SCHEDULES EXAMINATIONS IN CHICAGO AND PORTLAND, OREGON

The American Board of Preventive Medicine and Public Health, Inc., has announced that the next written and oral examinations for certification of public health physicians will be held under the auspices of the Board in Chicago, Ill., February 7–9, 1950. Physicians interested in certification should communicate with the Secretary of the Board, Ernest L. Stebbins, M.D., 615 North Wolfe Street, Baltimore, Md.

The Board has also announced that the next examination after that in Chicago will be held in Portland, Ore., May 28–30, 1950, immediately preceding the meetings of the Western Branch A.P.H.A. in Portland. The Board has announced that the application closing date for the May examination will be February 1.

The attention of physicians in the Western part of North America is directed to the examination to be held in Portland which in all probability will not be repeated in the far West during the next two years.

KRESGE GIFT FOR RESEARCH

The Kresge Foundation of Detroit has made a $3,000,000 grant to the University of Michigan for the construction of a medical research institute. This is one of five new units planned by the university to complete its enlarged medi-

cal center. Other units include an outpatient clinic, a maternity hospital, due to be completed in a few months, a medical and nursing education building, and a children's and infants' hospital.

NATIONAL COMMITTEE ON LOCAL HEALTH UNITS

The third annual meeting of the National Advisory Committee on Local Health Units was held in New York on December 5, with an attendance of about 35 persons, representing nearly as many national agencies, both civic and health. At this meeting the committee's activities were reviewed and plans made for 1950.

The coming year's program is to be focused on more extensive participation of lay persons and lay agencies. "That Extra Something," a leaflet recently prepared and designed to enlist the interest of citizens in the development of local health protective services, will be widely distributed.

In addition to the discussions of the committee's program, the highlight of the day was the report by various agencies as to their activities in the development of local health services. Chief among these was the report of the Congress of Parents and Teachers on its organization of support for the Local Health Units Bill, which passed the U. S. Senate and is expected to be passed in the House shortly after the Congress reconvenes.

Among further matters reported were the organization of a Texas county health department under pressure of local women's clubs the request of the National Board, Young Women's Christian Associations; to local associations that they coöperate with, or when necessary organize, groups to work for the development of local health departments or for the better understanding and support of existing departments; the questionnaire of the National Federation of Business and Professional Women's Clubs to its local clubs designed to inform and interest members in their community's health as to organization, sanitation, safety activities, school health, and health resources. Forty per cent of the 2,500 local clubs returned this questionnaire to national headquarters.

Representatives of such agencies as the National Foundation for Infantile Paralysis, the American Heart Association, and the National Tuberculosis Association indicated that the effectiveness of their own activities depends upon the existence of a well functioning community health department. As a consequence, the importance of developing such departments is stressed by these agencies.

Harald M. Graning, M.D., of the Public Health Service reported that state health officers were noting an increasing interest in local health services by "home town folks"; also the increasing interest in the consolidation of existing small units, in which activities the League of Women Voters was showing a special interest. He announced that an educational film in this field "So Much for so Little" is now being shown by both the Warner Brothers and the Fox chains of theatres, after which sufficient copies will be available for distribution to each state health department. The film has also been shown at the International Film Council in Geneva.

Lee A. Rademaker, M.D., practising surgeon of Salisbury, Md., former representative of the Lions Club and now a member delegate-at-large of the National Advisory Committee, reported on the growth of the Wicomico County Health Department in Maryland, from a single one staff member department in 1931 to the present day with a complete staff and a well rounded program—a result achieved by the active work of citizens both as individuals and as members of community groups.

At the luncheon, Haven Emerson,

M.D., was speaker. The theme of his informal address might be paraphrased as, the professional bodies and experts having started this ball rolling, it is now up to the citizens to pick it up and carry it over the goal line of adequate local health protective services for every person in the United States. Nor must we be satisfied with theoretical coverage; quality of service must be our immediate and continuing concern.

The following officers were elected for 1950:

Chairman: Mrs. L. W. Hughes, past president of the National Congress of Parents and Teachers

Vice-Chairman: Lee A. Rademaker, M.D., surgeon, Salisbury, Md.

Secretary: Martha Luginbuhl, National Health Council

Executive Committee

Haven Emerson, M.D., American Public Health Association

H. T. Friermood, secretary, Health and Physical Education, National Council, Young Men's Christian Association

Lloyd C. Halvorson, economist, National Grange

Mrs. Irmagene Nevins Holloway, director, Health and Safety, National Federation of Business and Professional Women's Clubs

Reginald A. Johnson, director of Field Services, National Urban League

Kenneth L. Kramer, Congress of Industrial Organizations

Mrs. Luther H. Kice, Woman's Auxiliary, American Medical Association

James G. Stone, director, Program Development, National Tuberculosis Association

John Ben Shepperd, U. S. Junior Chamber of Commerce

PERSONALS

BLANCHE ARMSTRONG, formerly public health educator, Mississippi State Board of Health, has been appointed public health educator New York State Health Department, Office of Public Health Education.

ROBERT BARRIE,† has been promoted from administrative assistant to assistant executive secretary, Committee on Tuberculosis and Public Health of the New York State Charities Aid Association.

ALONZO F. BRAND, M.D.,† Medical Director, U. S. Public Health Service, is now Regional Medical Director of Region No. 10, San Francisco, Calif., succeeding WALTER T. HARRISON, M.D.,* retired.

STUART T. BRAY, M.D., has been appointed health officer for Buchanan and Tazewell Counties, Virginia.

PAUL B. CHAPMAN, M.D., has succeeded JOSEPH W. STILL, M.D.,† as health officer of the Frederick-Winchester Virginia Health District, the latter having resigned.

RUTH T. CLOUGH, is now health educator, Bureau of Health, Maine Department of Health and Welfare.

FRANCIS A. CULVER,† formerly chief of technical information, Office of the Chief Surgeon, European Command Headquarters of the U. S. Army, Frankfurt, Germany, is now consultant, Health Education Services, National Tuberculosis Association, with special responsibilities for the development of visual aids.

WILLIAM E. DODGE has been appointed Sanitarian, to serve with the Baker-Union District Health Department of Oregon.

J. R. DOWNES, M.D., has retired as New Castle County health officer, Delaware.

DOROTHY DUCAS, who has served with the March of Dimes as special public relations consultant since 1944, has been appointed public relations director of the National Foundation for Infantile Paralysis.

BION EAST, D.D.S.* who is on leave from Columbia University as Associate Dean of the Medical Faculty in charge of the School of Dentistry while he is serving as Dental Director of the Department of Medicine and Surgery in the Veterans Administration, Washington, D.C., has resigned as Associate Dean and has accepted in absentia a new post under the title of Professor of Dental Public Health in the Columbia School of Public Health, New York.

LESTER J. EVANS, M.D.,† medical associate of the Commonwealth Fund, has been appointed consultant in medical education to the State University of New York. He will assist in formulating plans for the establishment of the overall university medical education program, continuing meanwhile with the Commonwealth Fund on a part-time basis.

DOROTHY B. FEREBEE of the health service staff, Howard University, Washington, D. C., has been elected president of the National Council of Negro Women.

L. H. FLANCHER, M.D., M.P.H.,* has resigned as director of the Division of Tuberculosis Control, Iowa State Department of Health to return to his former position as superintendent and medical director of the Sand Beach Sanatorium at Lake Park, Minn.

JOHN L. FORSTON, formerly with the radio-television department of N. W. Ayer & Son,

* Fellow A.P.H.A.
† Member A.P.H.A.

has been appointed director of public relations, National Society for the Prevention of Blindness.

ALICE FRAZER, completing her field training in Health Education with the Colorado State Department of Public Health, recently became public health educator on its staff.

EDNA STAFFORD GOULD,* has been appointed Director of the Visiting Nurse Association, Evanston, Ill., succeeding LYDIA R. SHEALL,† who has retired after 20 years service as director.

D. A. HALFERTY, M.D., has been made deputy district health officer of the Lincoln-Tillamook District Health Department of Oregon.

RUTH M. HARRIS,† formerly executive secretary of the Mecklenburg County (N. C.) Tuberculosis and Health Association was recently appointed associate, Program Development Service, National Tuberculosis Association.

CHARLES R. HAYMAN, M.D.,* recently county health officer for Kent County, Delaware, has resigned to become deputy state-county health officer in Harford County, Maryland, with headquarters at Belair.

JEANNE HECKEL, staff nurse at St. Anthony's Hospital, Las Vegas, N. M., became Hospital Inspector, Colorado State Health Department, in September.

ELLEN J. HENDRICKSON, R.N., is consultant in maternity and infant welfare in the Nursing Bureau of the Massachusetts Department of Public Health.

JOHN P. HINES, has been appointed industrial hygiene engineer of the Oregon State Board of Health.

BERNARD E. HUGHES, ED.D., formerly professor of health education, Colorado State College of Education, has been made school health consultant New York State Committee on Tuberculosis and Public Health.

LAURA J. JONES, R.N., supervisor consultant in the Nebraska State Department of Health, has resigned to become chief of the nursing unit, Regional Office, Veteran's Administration, Albuquerque, N. M.

JOSEPHINE KEOUGH,† formerly with the Wisconsin State Board of Health as advisory public health nurse, is now studying mental hygiene in public health nursing at Teachers College, Columbia University, New York.

NORA LALOR, former Hospital Nursing Consultant in Maternity and Infant Care, Oregon State Health Department, is now instructor in a program of study for consultants in Maternity and Infant Nursing at Teachers College, Columbia University, New York.

CARL L. LARSEN, M.D., has been designated as the new Director of the Rocky Mountain Laboratory of the U. S. Public Health Service at Missoula, Mont., succeeding the late RALPH R. PARKER, M.D.

MORTON L. LEVIN, M.D.,* has been granted a leave of absence as assistant commissioner for medical services of the New York State Department of Health, to become director of the Commission on Chronic Illness, recently organized jointly by The American Medical Association, the American Hospital Association, the American Public Health Association, and the American Public Welfare Association. Headquarters are with the American Medical Association in Chicago.

ELIZABETH A. LOCKWOOD, DR.P.H.,† has been appointed Field Consultant in Health Education, The National Foundation for Infantile Paralysis. On January 1, she also took office as President of the National Association of Biology Teachers and of the National Association for Research in Science Teaching.

GENERAL GEORGE C. MARSHALL, former army Chief of Staff and Secretary of State, was appointed by President Truman as president of the American Red Cross, succeeding BASIL O'CONNOR.

NORA M. MCQUADE, recently retired after 19 years of service in the Nursing Bureau of the Massachusetts Department of Public Health. She will live in Manchester, N. H.

HENRY C. MEADOW, formerly coördinator of industrial research, University of Rochester, N. Y., has been appointed executive secretary to the Committee on Research and Development for Medicine and Health, of Harvard University.

MARIE NEUSCHAEFER, R.N.† formerly director of Nursing Services, Weld County Health Department, is now assistant director, Public Health Nursing Section, Colorado State Health Department.

LUCILE PETRY, R.N.,† assistant surgeon general and chief nurse officer of the Public Health Service, has been appointed to the Expert Committee on Nursing of the World Health Organization.

EDWARD A. PISZCZEK, M.D.,* on a year's leave of absence as director of the Cook County, Ill., health department, has been appointed controller of the Suburban Cook County Tuberculosis Sanitarium District.

M. ALLEN POND, M.P.H.,* assistant chief sanitary engineer of the Public Health Service, has been made chief of the new Division of Engineering Resources in the Bureau of State Services, Public Health Service.

ELLEN C. POTTER, M.D.,* Deputy Commissioner of Welfare in the New Jersey State Department of Institutions and Agencies, resigned September 1 after 22 years of State service.

BUEL REAGAN,† who recently received the M.P.H. degree in public health education from the University of Michigan School of Public Health, is now health educator, Tompkins County Health Department, under a New York State Health Department Fellowship.

MYRON P. RUDOLPH, M.D., DR.P.H.,* formerly health officer, Pittsylvania County, Va., is now director of health, Catawba-Lincoln-Alexander Counties District Health Department, N. C.

FRANK D. RYDER, M.D., practising physician of Grand Island, Nebr., has been appointed Nebraska State Health Officer succeeding W. S. PETTY, M.D.,* resigned. Dr. Petty remains as director of local health administration.

J. A. SALVATO, JR., P.E., M.C.E.,* formerly district sanitary engineer, New York State Department of Health, has been appointed chief of the Bureau of General Sanitation, Erie County Department of Health.

EDWARD R. SCHLESINGER, M.D.,* director New York State Health Department's Bureau of Maternal and Child Health, has been appointed Associate in Pediatrics in the Department of Pediatrics of Albany Medical College.

EDMUND SCHREINER, director of the Office of Legal Affairs, New York State Health Department retired from state service on December 1, 1949.

LLOYD R. SETTER, PH.D.,† formerly sanitary engineer in Public Health Engineering, TVA, has been appointed principal chemist, Physics and Chemistry Section, Environmental Health Center, U.S.P.H.S., Cincinnati, Ohio.

EDWARD SIERKS,† former assistant professor in the Department of Health and Physical Education, University of Illinois, is now consultant, Health Education Service, National Tuberculosis Association.

WILBUR R. SOUTHWARD, JR., M.D., has been appointed director of the Bureau of Venereal Disease Control, Virginia State Department of Health.

RUTH SUMNER, PH.D.,* for the past 4 years director of the Division of Public Health Education of the Savannah-Chatham County Health Department, Georgia, is now chief of the training unit Field Services Section of the Office of Public Health Education, New York State Department of Health.

JOSEPH L. TAYLOR, is now Sanitarian for Umatilla County Health Department, Oregon.

PERRY R. TAYLOR, Public Health Service analyst, has been appointed executive officer of the nation's 11-man Water Pollution Control Advisory Board, succeeding KENNETH C. LAUSTER,† who has become chief basin engineer of the North Atlantic Drainage Basins area, one of ten regions into which the Public Health Service, through its Division of Water Pollution Control, has partitioned the country.

LT. COL. FENNER H. WHITLEY, of St. Petersburg, Fla., has been assigned as Sanitary Engineer to the Eighth Army Medical Section with headquarters in Yokohama, Japan.

PABLO O. WOLFF, M.D., Buenos Aires, has been appointed medical officer at the headquarters of the World Health Organization in Geneva, Switzerland.

NEW PERSONNEL, NEW YORK STATE COMMITTEE OF TUBERCULOSIS AND PUBLIC HEALTH

WALTER DICKINSON, as staff assistant in the Niagara County Association.

JAMES HOULIHAN, as heath educator of the Oneida County Association.

DORIS MCQUAID, formerly on the staff of the Visiting Nurse Association in Syracuse is now assistant director of the Chemung County Visiting Nurse and Tuberculosis Association.

ROSALIE WEISS, as health educator for the Westchester Association.

DEATHS

OWEN F. AGEE, M.D.,† Acting Director, Division of Local Health Service, New Orleans State Department of Health(Health Officers Section).

THELMA FOSTER,† Director of Nursing Activities, Nashville-Davidson County Chapter, American Red Cross, Nashville, Tenn. (Public Health Nursing Section).

ALMON P. GOFF, M.D.,† retired Barnstable, Mass., health officer and former Army doctor, died recently (Health Officers Section).

ROSCO G. LELAND, M.D.,† Director of the Bureau of Medical Economics, American Medical Association before retirement, died October 17 (Public Health Education Section).

OLGA MARTINEZ,† Nutritionist, Department of Health, Santurce, Puerto Rico (Food and Nutrition Section).

STUART MCGUIRE, M.D.,† (Unaffiliated).

COL. JOHN W. MEEHAN, M.C., DR.P.H.,† (Engineering Section).

KATHERINE E. PAYNE,† education consultant in the Bureau of Public Health Nursing, New York State Department of Health, died October 13 (Public Health Nursing Section).

* Fellow A.P.H.A.
† Member A.P.H.A.

CLARENCE OLDS SAPPINGTON, M.D.,* editor of the Industrial Medicine and Surgery magazine and the first American to receive a Ph.D. in industrial Hygiene, died November 6 (Industrial Hygiene Section).

MAX TURTELTAUB,† Director of Sanitation and Food, Charleston County Health Department, Charleston, S. C. (Unaffiliated).

WILLIAM R. M. WHARTON,* Chief, East District, U. S. Food and Drug Administration, New York, N. Y. (Food and Nutrition Section).

BESS ANDERSON WINN, executive secretary of the Alaska Tuberculosis Association for the past 6 years died early in June at Seattle, Wash.

CONFERENCES AND DATES

American Association of Registration Executives. Washington, D. C. April 23.

American Association of Schools of Social Work. Milwaukee, Wis. January 22–24.

American Pharmaceutical Association. Atlantic City, N. J. Week of April 30.

American Water Works Association:
- Annual Meeting, Philadelphia, Pa. May 21–26.
- New York Section Midwestern Luncheon. Hotel Statler, New York, N. Y. January 17.

Child Study Association of America. Annual Conference. New York, N. Y. February 27.

Community Chests and Councils of America. National Conference. Cincinnati, Ohio February 1–4.

Council of the Public Health Conference on Records and Statistics. Washington, D. C. February 16–17 and April 22.

Illinois Public Health Association. Leland Hotel, Springfield, Ill. April 20–21.

International and Fourth American Congress on Obstetrics and Gynecology. Hotel Statler, New York, N. Y. May 14–19.

Maternity Center Association. Annual Meeting. New York, N. Y. January 19.

National Conference on Cardiovascular Diseases. Mayflower Hotel, Washington, D. C. January 18–20.

National Conference of Social Work. Atlantic City, N. J. April 23–29.

National Foundation for Infantile Paralysis. New York, N. Y. March 16–22.

National Health Council. Annual Meeting. New York, N. Y. March 24.

National Organization for Public Health Nursing. Biennial Meeting. San Francisco, Calif. May 5–12.

National Social Welfare Assembly, Inc. Annual Meeting. New York, N. Y. January 19–20.

National Society for the Prevention of Blindness. Annual Conference (held in conjunction with interim meeting of Pan American Association of Ophthalmology). Miami Beach, Fla. March 26–30.

National Tuberculosis Association. Annual Meeting. Washington, D. C. April 24–28.

National Urban League. Annual Meeting. New York, N. Y. February 15.

New York State Health Conference. Lake Placid, N. Y. June 5–8.

Public Health Conference on Records and Statistics. Washington, D. C. April 24–27.

Puerto Rico Public Health Association. School of Tropical Medicine, San Juan, P. R. February 8–11.

Southern Branch, American Public Health Association. Birmingham, Ala. April 27–29.

Western Branch, American Public Health Association. Portland, Ore. May 30–June 1.

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